



UNIVERSITY OF
LIMERICK
OLLSCOIL LUIMNIGH

Health
Research
Institute



ANNUAL REPORT

2020

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Message from the Director

Welcome to the 2020 annual report of the University of Limerick (UL) Health Research Institute (HRI). We are delighted to report that in the academic year 2019/20, the HRI attracted €10.5 million in research funding, showed a 45% growth from the previous year in journal refereed papers and attracted 3822 citations for publications since 2016. These markers are indicative of the continued growth, impact and success of the HRI.



Prof. Alan Donnelly
Director of HRI (Interim)

The year 2020 was marked by the spread of the SARS-CoV-2 virus across the world and the ensuing Covid-19 pandemic. The impact of the pandemic was felt directly by our research partners and members based in University Hospital Limerick and the wider HSE, and by the public across Ireland as cases began to mount and public health measures affected everyone's life. The HRI's continued operation and success through the pandemic is thanks to the hard work of the core team and our members through difficult circumstances.

This annual report includes examples of how our members have been able to contribute to the effort to better understand the epidemiology and impact of Covid-19, and to support the emergency response to minimise the pandemic's impact. This includes a number of funded projects, rapidly progressed from initial application to project initiation. The breadth and collaborative nature of all of these contributions highlight the HRI's ability to network, to share expertise and to be nimble in designing and implementing research projects to assist in the Covid-19 response.

This annual report also highlights the important role of the HRI's Clinical Research Support Unit (CRSU), based in the University Hospital Limerick's CERC building. The unit supported and co-ordinated Covid-19 related studies including Sprint SARI and the World Health Organisation's Solidarity Study, a study testing the efficacy of treatments for Covid-19 in the early stages of the pandemic.

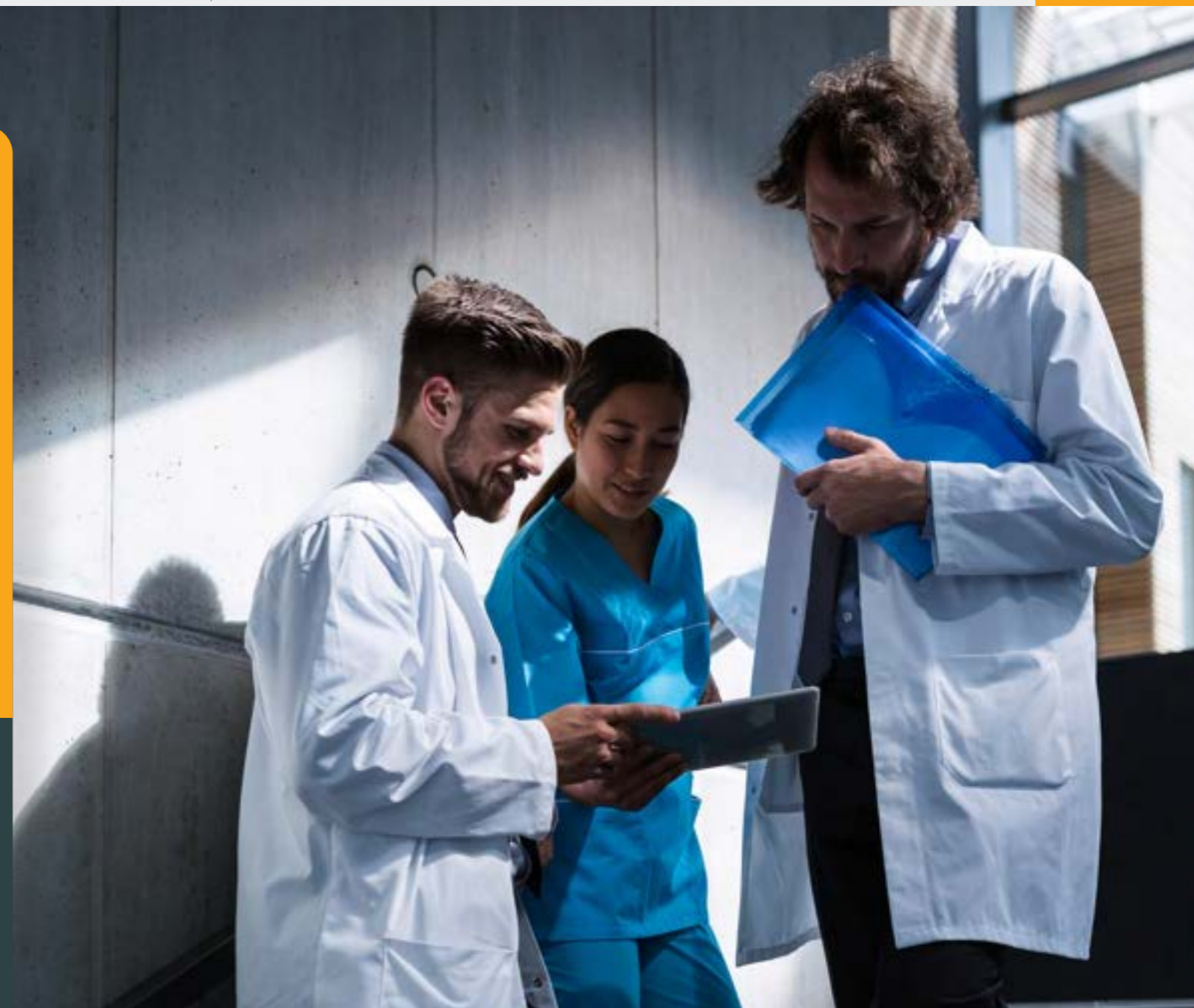
The report also demonstrates the work of Prof. Paul Burke, the Chief Academic Officer at University Hospital Limerick, and the important role of the Chief Academic Officers in linking University and Hospital research, particularly through the Covid-19 pandemic.

Although Covid-19 was the dominant health issue in 2020, our other research work has continued to be innovative and impactful. The report includes many examples of our research success in 2020, including newly funded projects, and research events and activities, many of which were achieved online throughout 2020.

The year 2020 has been difficult by any standards, and the necessity to rapidly change our modes of work and to mobilise our efforts to support the national Covid-19 response has produced rapid changes and many positive benefits.

We have emerged stronger, more resilient and more engaged as a result, and our research metrics continue to gain strength.

I am delighted to present you with the Health Research Institute's 2020 annual report, and I hope that you will enjoy reading it.



Introduction to the Health Research Institute

The University of Limerick's Health Research Institute (HRI), founded in 2014, has a prime role in fostering and delivering health research in Limerick and nationally.

The HRI has developed a unique transdisciplinary approach to health research, focusing on translational outputs with direct relevance to health practice, and delivering research excellence and impact in the health domain through a vibrant membership and supportive ecosystem.

The 2020 Annual Report demonstrates how this unique approach has translated to research success and productivity across the HRI research areas.

The Covid-19 pandemic has highlighted the benefit of multi-disciplinary and translational research teams. As evidenced by this report, our researchers have been able to rapidly mobilise to develop and implement research projects and strategic, collaborative initiatives to assist in the national Covid-19 response. The 2020 annual report has a focus on these research projects and initiatives demonstrating the capacity of the HRI members to rapidly innovate to design and implement projects across the breadth of the HRI's focus areas. The Institute's close links with University Hospital Limerick have also been important, with the HRI's Clinical Research Support Unit, embedded in the University Hospital playing an important role in supporting and co-ordinating clinical trials of Covid-19 treatments and other Covid-19 related studies.

In 2018, the HRI provided strategic funding through an externally reviewed competitive process in order to focus and strengthen research activities and impact within its core areas. These clusters were launched in 2019. Each cluster has members from multiple disciplinary areas grouped around a common research programme:

- + Health Implementation Science and Technology (HIST)
- + UL Cancer Network (ULCaN)
- + Ageing Research Centre (ARC)
- + Physical Activity for Health (PAfH)

In addition, two emerging research clusters were funded:

- + The Creative Process Meets the Creative Product- Enhancing the Performance Artist through Research, Design and Technology: PD+PA (Product Design and Performing Arts)
- + Participatory and ARTs based methods for Involving Migrants (PART-IM).



An update on each cluster's progress for 2020 is provided in this report, outlining how they have extended the research activity and productivity of the HRI.

Despite the constraints imposed by the Covid-19 Pandemic, the clusters have been highly active, extending the HRI's research capacity and extending external links that will enhance the HRI's network.

Building on our strong foundation and benefiting from the development of the new research clusters, the Health Research Institute advances transdisciplinary and interdisciplinary research that will bring about innovative solutions for disease prevention, enhanced healthcare delivery, and will ultimately contribute to the health and wellbeing of the population.

The 2020 report summarises the achievements of our members, and demonstrates how researchers in the HRI have achieved national and international impact. The report details the HRI support mechanisms, and updates on the research clusters and their activities. This report also focuses on the important work that our members have undertaken to support the national and international effort to respond to the SARS-CoV-2 pandemic.



Mission, Vision & Goals

Mission

The HRI will conduct outstanding person-centred research to enhance the health and wellbeing of individuals and transform the health environment for the population.

Vision

The HRI will be an internationally recognised research institute that delivers excellent research with impact in the areas of Lifestyle and Health, Health Services Delivery, Health Technologies, and Public and Patient Involvement (PPI). It will foster a culture of interdisciplinary research collaborations to support discovery and innovation in health and wellbeing while also providing relevant and critical research training.

Goals

The success of the HRI is based around the achievement of the following four strategic goals:

1. Research Excellence

Deliver excellent research to establish our reputation as a Health Research Institute.

2. Impact

Leverage our position as the bridge between clinically based and university based researchers to make an impact on patient health and wellbeing.

3. People and Ecosystem

Invest in and empower our people through a culture of excellence and impact.

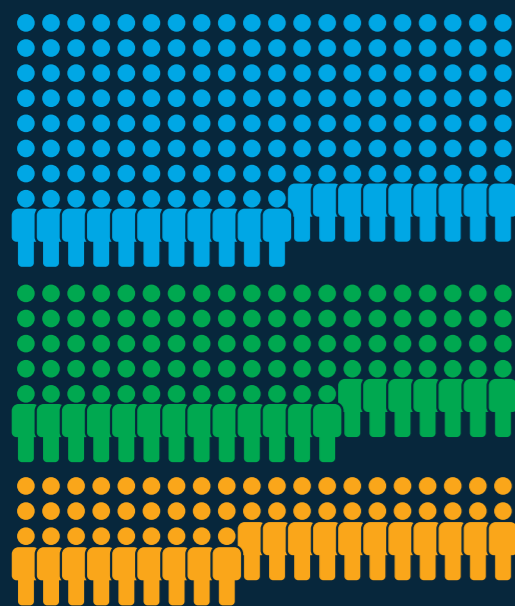
4. International Reach

Extend our international reach by engaging in collaborative partnerships and disseminating research.

Main Achievements 2020

HRI Membership

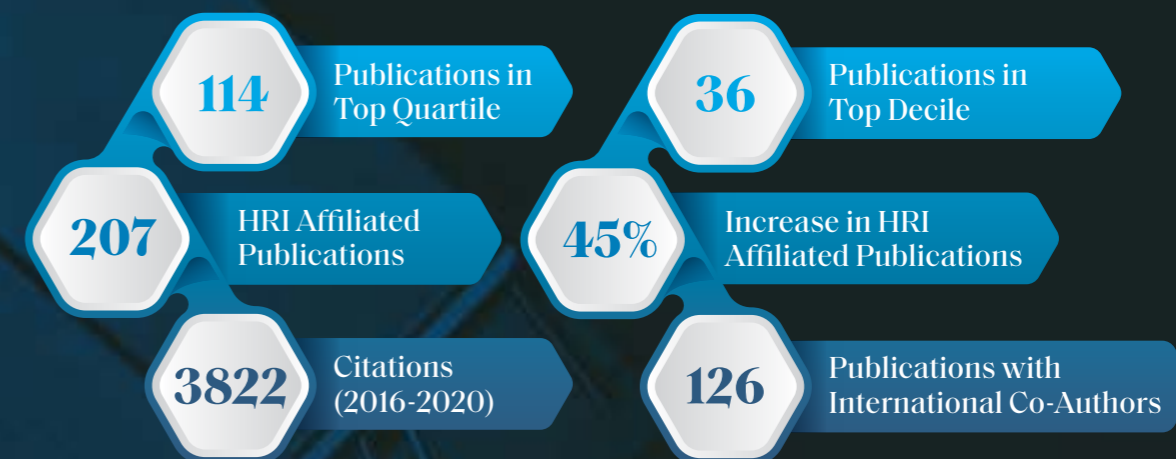
293 Members



Full Members 2017-2020



HRI Publications 2020



Research Grants Awarded

In total, HRI's research income for the Academic Year (AY) 2019/2020 was **€10.5M**.

In total, HRI's research income for the Academic Year (AY) 2019/2020* was just over €10.5M. Grants valued at over €50,000 accounted for a little under €10M, and are listed at Appendix 3.

Our main funding sources included: **Health Research Board; Science Foundation Ireland; Irish Research Council; European Union, Enterprise Ireland; Environmental Protection Agency, Department of Agriculture, Fisheries and the Marine and UL Foundation**, as illustrated in the below diagram.



€10.5M
Research Funding
2019/2020



15 % increase
in CRSU Studies
versus prior year



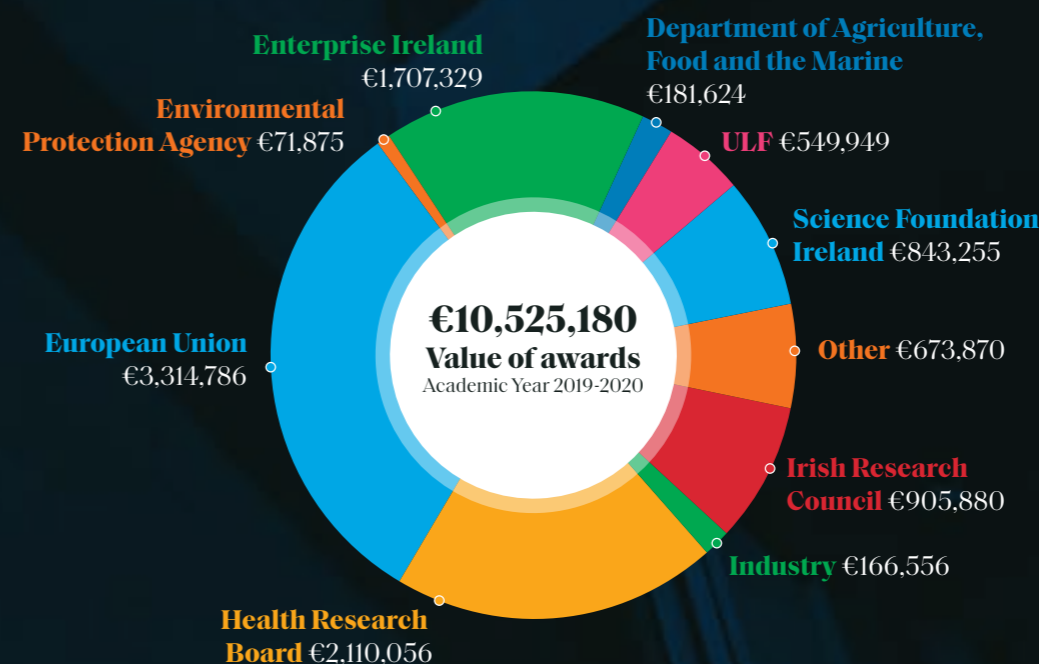
>600 people
attended HRI
activities & training



70 Awards
granted



Over 1,150
Patients involved in
CRSU Studies



Grants of below €50K accounted for just under €600K of income and were comprised of awards provided by the **Irish Research Council**: GOI PD Fellowships, Enterprise Partnership Scheme, ULYSSES and New Foundations; **Health Research Board**: KEDS award and Conference and Event Sponsorships. Funding was also secured through **Enterprise Ireland**: Innovation Partnership and Feasibility grants, Commercialisation Feasibility grants, Innovation vouchers, Technology Pipeline fund and EI H2020 coordinator supports. Industry partnerships were also a source.

This data is collated from the Full HRI membership list.

*Please note Academic Year (AY) refers to October 2019-September 2020



Covid-19



The **Covid-19 pandemic** has had, and continues to have, a tremendous impact on every aspect of life.

The impact on research activity was swift and severe. Unprecedented challenges presented with an associated urgency requiring rapid and forensic decisions with a dearth of information.

HRI Members responded in a manner that can only be described as outstanding.

Examples given below, illustrate the absolute unquestioning willingness and indeed eagerness of our Members to collaborate, to share specific expertise, and unselfishly commit time and effort to a common goal.

The examples span national and local collaborations and focused funding success- all driving and facilitating a momentum that speaks volumes about our research community.

The Response to Covid-19: Expertise and National Collaboration

Working with the Irish Epidemiological Modelling Advisory Group

– *A busy year*

Prof. Cathal Walsh

Chair in Statistics, Dept. of Mathematics and Statistics, UL



The night before the SPHERE conference in February of last year, I met for dinner with other guest speakers who had been invited to participate. At that stage we were concerned that Covid-19 was starting to be seen in Europe, particularly in Italy. No handshakes and a polite distance were among the precautions we were already taking. Less than a week later we had a meeting in UHL exploring the social determinants of health. Many attendees and some of the organisers who were working in public health were taking phone calls about the evolving situation and there were reasons for concern in Ireland. In the University we were alert to those who may have symptoms and were rethinking how we might work with reduced contacts. The local preparations for a Limerick response were already taking place.

On the academic front, life was also about to get busy. Through informal networks, colleagues in UCD were alerted of the need for modelling expertise. Over the course of a weekend, with expertise in health statistics and disease modelling of different types, I had committed to getting involved as necessary. So too had **James Gleeson**, another Professor in the Mathematics and Statistics Department, who had broader expertise in mathematical modelling, though had worked less in health applications in the past.

By the next week we had Zoomed together a core group from across multiple Universities, chaired by the President of Maynooth University, **Prof. Philip Nolan**. Thus, the Irish Epidemiological Modelling Advisory Group (IEMAG), which reports to the National Public Health Emergency Team (NPHE), began. Work had begun in earnest. Our initial two-hour weekly meetings would be supplemented by other meetings of groups including other departmental colleagues, scientists in other disciplines and international experts. As was the case for many others in the HRI and UL, work such as this became part of how, as academics, we contribute to public policy and public need.

The work was tiring at times. On occasion we became frustrated due to the paucity of scientific information or data on cases here. Many a practical resource, such as national testing capacity, was constrained and how this was coordinated was sometimes unclear. But despite this, the way in which our group worked, seamlessly agnostic as to our home institutions and with strong respect for our varying backgrounds and skillsets, was a joy to be part of.

Lessons have undoubtedly been learned. For example, transmission in poorly ventilated indoor spaces is now seen as a greater risk than transmission by contaminated surfaces.

The proportion of cases that were asymptomatic was a large unknown to begin with but is now better determined. The efficacy of tests, such as PCR tests and Rapid Antigen tests is now better understood – albeit much worse than some imagine. We are still understanding more, such as the extent to which vaccines work, and how variants may affect them. This pandemic is not over yet, since neither our own nor the international trajectory are resolved. But the reasons for hope are many. Not least of these is the knowledge that the Limerick and Mid-West community across all health services and across the University can work together, and with colleagues nationally, as the need arises.

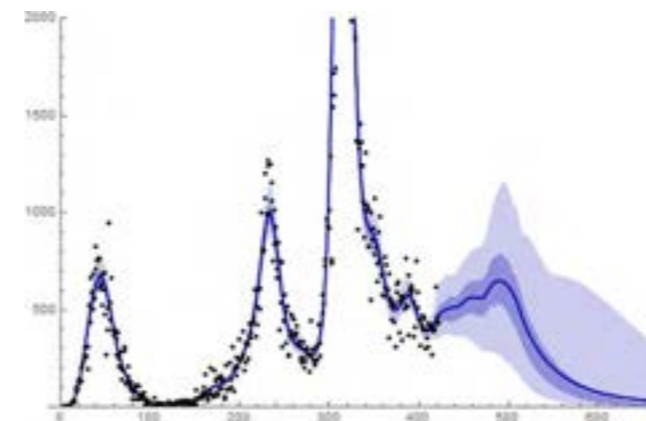


Figure: Graph of number of cases of Covid-19 notified (dots) with the fitted SEIR* IEMAG model overlaid (to which UL and HRI researchers contribute.) The right-hand side of the graph shows a scenario projection with uncertainty bounds, with the impact of vaccination evident in the projection.

Image from gov.ie slides presented at Department of Health press conference which have become familiar to many over the last year.

*Susceptible-Exposed-Infectious-Removed

The #COVIDWATCH Journey during the Covid-19 Pandemic and beyond

Prof. Liam Glynn

Professor of General Practice, School of Medicine, UL



Very early in the outbreak here in Ireland, UL academics **Professor Liam Glynn** and **Dr Mike O'Callaghan**, who are also frontline clinicians working in General Practice, sought to contribute to the public health response with the founding of #COVIDWATCHIRL and more recently #COVIDWATCHEU on Twitter and the web.

Throughout this crisis, they have continued to deliver care to their practice populations in Ballyvaughan Co. Clare and Bruff, Co. Limerick, respectively, during what they both agree has been the most challenging time of their clinical careers.

They published daily comparative data for the first 100 days of the pandemic and then as cases thankfully began to fall, they began to publish data weekly. The focus of this endeavour was to attempt to drive the behavioural change required of our campus community and country to combat Covid-19.

There has been an enormous amount of positive feedback from the campus community and the wider community to this work.

In addition, the project gained a national following with an average of 40,000 impressions on Twitter daily for the first 100 days of the pandemic. It has also involved numerous media engagements for the team such as Morning Ireland and Drivetime on RTE Radio 1, the RTE Six One News, Primetime, TV3 Tonight Show and a regular weekly slot on Newstalk Breakfast as well as regional radio such as Limerick's own LIVE95 FM, Clare FM and Galway Bay FM. Trying to translate and interpret the data for a lay audience and the media has been a big challenge but a key component of the campaign.

This work has been of enormous benefit in terms of guidance, support and reassurance for members of the campus community in many ways.

At the same time, the team managed to contribute to several academic publications on the Covid-19 pandemic in Ireland.

Prof. Liam Glynn was also appointed clinical lead of the Northern Periphery and Arctic (NPA) Covid-19 Response Group and the team was then funded by the European Union through the INTERREG programme to internationalise the #COVIDWATCHIRL project across a series of Northern European countries (COVIDWATCH-EU-NPA).

www.interreg-npa.eu/Covid-19/npa-response-group-and-projects

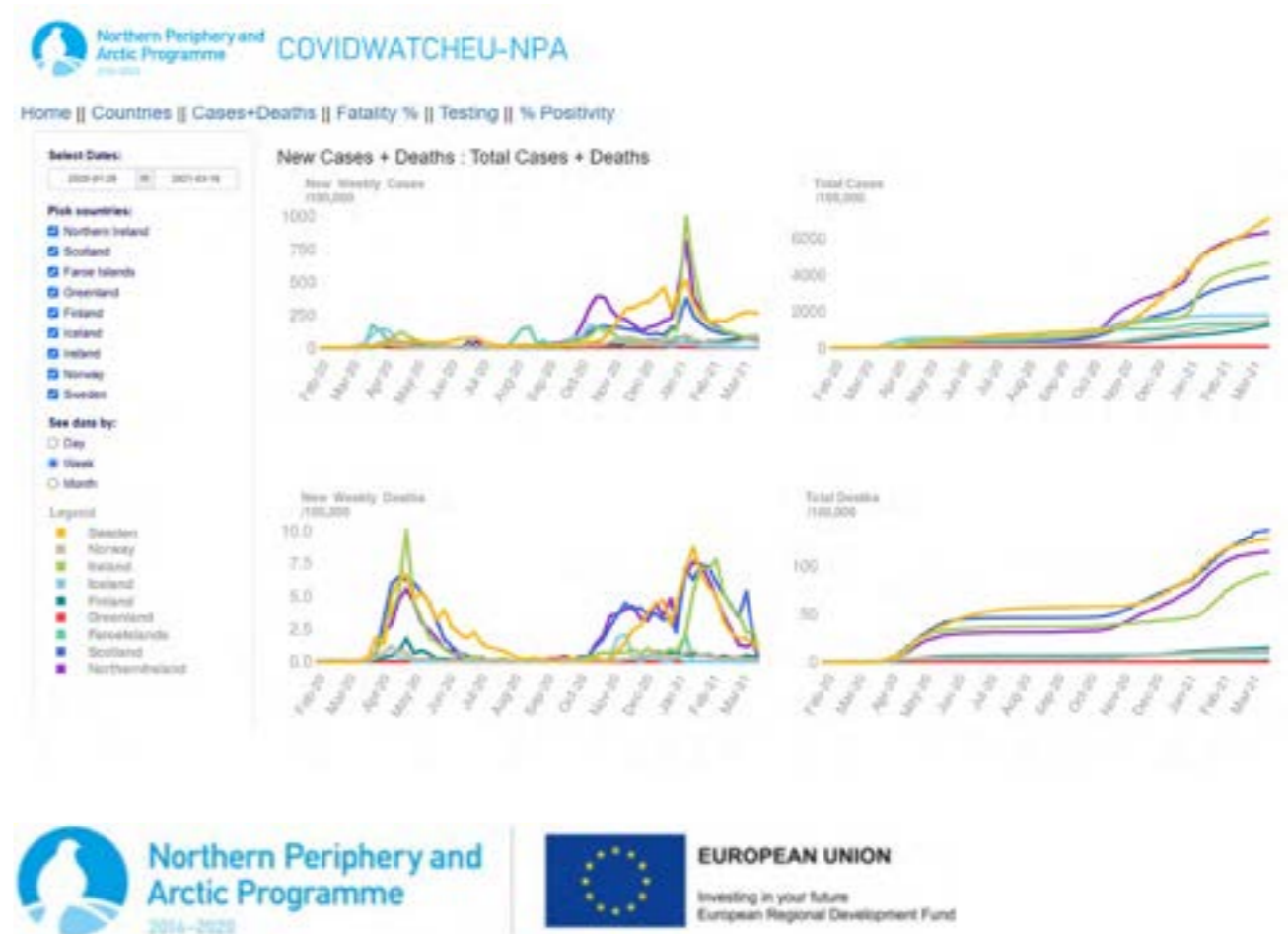
The team also successfully applied for research funding under the Covid-19 Rapid Response umbrella. This has involved collaborating on two SFI-funded projects:

- + Firstly, the COVIGILANT project focusses on the topic of contact tracing apps and is led by **Dr Jim Buckley**, UL with colleagues from Lero and NUI Galway. **Dr Mike O'Callaghan** is a theme lead and has recently published the results of an online survey taken by over 8,000 participants in May 2020 examining the general public's views on the potential for a Covid contact tracing app (www.researchsquare.com/article/rs-40778/v1).

More information on the COVIGILANT project is available below.

- + Secondly, having worked in, and contributed to, the organisation of the Shannon Covid-19 Community Assessment Hub with Clare GP **Dr Marese Mannion** and **Margaret Costello** of the HSE, **Prof. Glynn** is now collaborating on another SFI-funded project led by **Prof. Ailish McAuliffe** from UCD on the role and function of these hubs during the first wave of the pandemic.

Finally, the team has also carried out the first seroprevalence study of Covid-19 antibodies in the community in the Mid-West, the results of which are eagerly awaited. This involved 15 general practice sites across Limerick, Clare and Tipperary and involved nearly 1000 patients and healthcare staff in the community.



The Covigilant Project: Optimisation of Digital Contact Tracing Apps

Prof. Ita Richardson

Professor of Software Quality, Dept. of Computer Science & Information Systems, UL and Co-Principal Investigator, Lero



The Covigilant Project, as mentioned above, was led by **Prof. Jim Buckley**, Lero & Department of Computer Science and Information Systems (CSIS). HRI members involved were **Prof. Liam Glynn**, School of Medicine, and **Prof. Ita Richardson**, Lero and CSIS.

Other team members from UL, NUIG and Lero were: **Manzar Abbas, Sarah Beecham, Muslim Chochlov, Brian Fitzgerald, Kevin Johnson, John Laffey, Bairbre McNicholas, Bashar Nuseibeh, James O'Connell, Derek O'Keeffe, Ian R O'Keeffe, Mike O'Callaghan, Abdul Razzaq, Kaavya Rekanar, Andrew Simpkin, Cristiano Storni, Damyanka Tsvyatkov, Jane Walsh, Thomas Welsh.**

This was a six-month, Covid-19, Rapid-Response project funded by the SFI (€147K) and proposed/undertaken by a mix of software and medical experts in Lero, across UL, NUIG and University Hospital Galway. Its purpose was to work towards the optimisation of Digital Contact Tracing Apps (DCTAs) from three perspectives:

- A.** The end user- as the contact-tracing information provided by the app is only as good as the number of users who download and retain it.
- B.** Current best practice in DCTAs.
- C.** A Blue-Sky, idealised perspective.

As part of the work, we carried out a large-scale survey of the Irish public both before and after the HSE App was released and interviews with folks who were less represented in those internet surveys – for example elderly groups who might be less technically literate (A).

We developed a framework/listing of (over 150) evaluation concerns that might act as guidance for those responsible for the development and evolution of DCTAs (B). That framework is available on the website: <https://site-3663423-408-3579.mystrikingly.com>.

Finally, we performed a literature review from the perspectives of social/ethical, user-experience and clinical concerns that might inform best practice from an idealised perspective (C).

All outputs of the project were reported to the Health Service Executive / Department of Health in advance, but ultimately became/are becoming academic articles:

- + O'Callaghan M.E. et al. (2020). A national survey of attitudes to Covid-19 digital contact tracing in the Republic of Ireland. *Irish Journal of Medical Science (1971-)*, pp.1-25.
- + Welsh T. et al. (2020). Towards a taxonomy for evaluating societal concerns of contact tracing Apps. In *2020 7th International Conference on Behavioural and Social Computing (BESC)* (pp. 1-6). IEEE.

PPI Research Unit and WHO Collaborating Centre for Migrants' Involvement in Health Research: Covid-19 inequities between ethnic groups

Prof. Anne MacFarlane

Professor of Primary Healthcare Research, School of Medicine, UL

Prof. Ailish Hannigan

Associate Professor of Biomedical Statistics, School of Medicine, UL



Via the PPI Research Unit and WHO Collaborating Centre for Migrants' Involvement in Health Research:

Emerging evidence highlighted that there are Covid-19 inequities between ethnic groups: some refugees and migrants have specific vulnerabilities given their living and/or working conditions

(Ref: Kluge H, Jakab Z, Bartovic J, D'Anna V, and Severoni S. Refugee and migrant health in the Covid-19 response. *Lancet*. 2020;395(10232):1238-9).

Drawing on our Health Research Board funded, participatory project about *ethnicity data collection in Ireland (2017-2020)* and our participation in a *WHO network of international migrant health researchers*, we approached the Chief Medical Officer in May 2020 to support evidence-based policy and practice. From this approach, we:

- + Submitted a policy brief to the Department of Health about the implications of our HRB study research findings for ethnicity recording for Covid-19 cases. We provided information about *what* variables should be collected (e.g., country of birth and CSO ethnicity categories) and guidance about *how* data should be collected (e.g., using trained interpreters to enable people to voluntarily self-identify their ethnicity).
- + Participated in a subgroup of the Irish Epidemiological Modelling Advisory Group (IEMAG) for NPHET *about data on Covid-19 in vulnerable communities*, including refugees and migrants living and working in situations that compromised their public health prevention options.
- + Collaborated with the National Office for Social Inclusion initiatives to design *ethnicity data collection training and guidance for contact tracers* to improve their skills and confidence to collect information on people's ethnic and cultural backgrounds during contact tracing.

Dietitians providing nutrition support during the first wave of Covid-19

Development of professional evidence-based decision guidelines



Dr Anne Griffin

Lecturer & Registered Dietician, School of Allied Health, UL

In the unprecedented early onset of the Covid-19 pandemic in Ireland, there was a need for greater communication of evidence-based information and the sharing of expertise across the dietetic community.

I led a professional task and finish group to develop and collate resources to support the urgent need for information on appropriate nutrition care pathways to provide oral and artificial nutrition support to those patients admitted to hospital with Covid-19. The task and finish group was composed of executive members of the INDI (Irish Nutrition & Dietetic Institute), Clinical Specialist Dietitians in Intensive Care, Oncology and Management of Community Dietetics. As such, it had representation of the settings in which it was expected Covid-19 would have the most impact on dietetic services.

The resources were placed in an online open access repository on the INDI website's eLearning Centre. Our aim was to be flexible and evolve documents that were fit for purpose. We both developed and adapted existing resources including guidance on the management of nutrition impact symptoms that were being reported as being associated with the onset of Covid-19 disease, e.g., loss of taste and smell. The documents were provided in Word format so they could be adapted to local policies, procedures and guidelines (PPG). We also developed a forum on our eLearning Centre to share experience, support each other, and seek knowledge. This forum was private and was not moderated.

There were two areas in the eLearning Centre – one for clinical dietetic practice and one as a signpost for general information (non-urgent, non-acute, general healthy eating) that could be shared with other health professionals and members of the public as needed.

The resources have also been shared with our colleagues in the British Dietetic Association and throughout the EU via the European Federation of Associations of Dietetics.



greater
communication
& sharing
of expertise

Emergency Evidence Response Service (EERS)

Dr Pauline Meskell

Senior Lecturer in Nursing & Health Research,
Dept. Of Nursing and Midwifery, UL



In March 2020 I joined the Emergency Evidence Response Service (EERS), which was developed by Evidence Synthesis Ireland, Cochrane Ireland and HRB-TMRN, as colleagues across the Department, Faculty, University and the wider research community refocused their research effort on prioritised Covid-19 activities.

My contribution to the response focused on **Qualitative Evidence Synthesis**.

I am a second author on the first ever Cochrane Rapid Qualitative Evidence Synthesis. This review focused on a question prioritised by the WHO and Cochrane and looked at barriers and facilitators to healthcare workers' adherence with Infection Prevention and Control (IPC) guidelines for respiratory infectious diseases.

To date this review has been cited by 205 papers, been presented to WHO and Chilean Ministry of Health, informed WHO interim guidance, been cited on Wikipedia and had many #KnowledgeTranslation outputs @CochraneEPOC.

The poster is titled "Health care workers and infection prevention and control (IPC) for respiratory infectious diseases: Implementation considerations". It features logos for Cochrane Ireland, Cochrane Effective Practice and Organisation of Care, and Evidence Synthesis Ireland. The main text states: "Health care workers point to several factors that influence their ability and willingness to follow IPC guidelines. This includes the nature of the guidelines, how relevant they are and how they are communicated. Other factors include support from management, workplace culture, and provision of training. Physical space, access to and trust in personal protective equipment (PPE) are key elements. A focus to deliver good patient care and protect their own health and family also means health-care workers are reluctant to follow guidelines. This review highlights the importance of including all facility staff, including support staff, when implementing IPC guidelines." Below this are four key areas: 1. Training and education: Mandatory training for infection transmission and PPE use for all staff who have contact with patients. 2. Delegate person for training/support: Help all staff to understand the importance of IPC. Ensure staff are properly fitted for PPE to avoid discomfort. Consider the impact of IPC on patient and family - loneliness, stigmatisation. 3. Organisational support: Clear evidence based guidelines in line with National and International guidance. Plan for effective communication of any changes to guidelines. Consider additional workload when caring for patients in isolation and the burden of PPE use. 4. Physical environment: Provide enough space to breathe, minimise overcrowding, restrict visitors. Provide adequate facilities for staff handwashing, changing and showering. Provide adequate supplies of quality PPE, recognising increase in demand. At the bottom, it says "Trusted evidence. Informed decisions. Better health." and includes a small text box with the review title and authors: "Implementation for the Evidence based on the following evidence synthesis of a qualitative research synthesis: Health care workers and infection prevention and control (IPC) for respiratory infectious diseases: Implementation considerations. Evidence synthesis Ireland, Cochrane Ireland and HRB-TMRN. 2020. Available at: https://www.evidence-synthesis.org.uk/library/rapid-reviews/rapid-review-001-implementation-considerations-for-ipc-guidelines-for-respiratory-infectious-diseases/." The poster also includes a link to the completed review.

→ [Link to completed review](#)

Emergency Evidence Response Service (EERS)

Dr Elaine Toomey

Lecturer, HRB Applying Research into Policy and Practice (ARPP)
Research Fellow, School of Allied Health, UL



Dr Elaine Toomey is a Lecturer in the School of Allied Health and was an expert reviewer for the Emergency Evidence Response Service (EERS) during the onset of the Covid-19 pandemic.

EERS was set up through Evidence Synthesis Ireland to provide timely reviews of prioritised questions from the World Health Organization (WHO), Cochrane and stakeholder groups in response to Covid-19. Within this role, Dr Toomey worked as part of an international team to update a Cochrane Review on the effectiveness of personal protective equipment (PPE) for preventing highly infectious diseases due to exposure to contaminated body fluids in healthcare staff. This review has been cited 460 times since its publication in early 2020.

As part of the EERS, Dr Toomey also contributed to the University of Oxford Centre for Evidence Based Medicine (CEBM) Covid-19 Rapid Evidence Service, led by Professor Trish Greenhalgh. As a systematic reviewer, Dr Toomey led a team of international interdisciplinary academics and clinicians from the UK, USA, Canada, Ireland and Switzerland on a systematic rapid review of evidence for reusing and extending the use of respirators.

This work has been cited in guidance published by the Australian New South Wales Government Covid-19 Critical Intelligence Unit, the US Department of Health and Human Services Agency for Healthcare Research and Quality and the WHO. Dr Toomey also contributed to six other international rapid evidence reviews and was on the Expert Panel for the Covid-19 Questions and Answers Service on the Irish College of General Practitioners (ICGP) website and the [iHealthFacts.ie](https://www.healthfacts.ie) public evidence platform.



Academic-Clinical Response to Covid-19

Chief Academic Officer Group

Prof. Paul Burke

CAO (Chief Academic Officer) UL-UL Hospitals Group, Vice Dean Health Sciences (UL), HRI Member and Chair of the Clinical Research Unit Management Board (UL/UHL)



Chief Academic Officers (CAOs) act as a link between their Hospital Groups and Universities – ensuring innovation, research and teaching remain at the forefront of Irish healthcare. As Covid-19 made itself known throughout Ireland in 2020 the CAO's began to harness their resources to focus on areas that needed urgent attention.

The Chief Academic Officers of the seven Hospital Groups began meeting weekly to discuss ongoing issues facing students and staff in their respective hospitals and universities. This group is chaired by UCD/ IEHG (Ireland East Hospital Group) Chief Academic Officer Professor Tim Lynch.

The CAO group aim to continue their work into 2021 – focusing on the firm establishment of a National Covid-19 Biobank with the **HRB**, progressing the National Simulation Strategy with the **NDTP**, (National Doctors Training and Planning), advancing an Academic Health Science System for Ireland with Minister Donnelly's office in the **Department of Health** and working to further represent staff and students working in a variety of healthcare roles.

Link to [CAO Annual Report 2020](#)

CHIEF ACADEMIC OFFICERS:

- + **Professor Paul Burke**
CAO UL, UL Hospitals Group
- + **Professor Arnold Hill**
CAO RCSI Hospitals
- + **Professor Joseph Keane**
Acting CAO Dublin Midlands Hospital Group
- + **Professor Timothy Lynch**
CAO Ireland East Hospital Group
- + **Professor Anthony O'Regan**
CAO Saolta Group
- + **Professor Owen Smith**
CAO Children's Health Ireland
- + **Professor Helen Whelton**
CAO South, Southwest Hospital Group

Covid-19 Contribution: Irish Society of Chartered Physiotherapists

Dr Roisin Cahalan

Lecturer in Physiotherapy, Course Director BSc Physiotherapy, School of Allied Health, UL



In the late Spring of 2020, module leaders for respiratory physiotherapy programmes around the country were invited to a meeting with representatives from the Irish Society of Chartered Physiotherapists (ISCP). The ISCP is the national, professional body representing over 3,000 Chartered Physiotherapists in Ireland. The Society is respected and recognised both within and outside the profession, as the voice of physiotherapy in Ireland. The meeting outlined the desire of the ISCP to offer resources and upskilling to physiotherapists returning to work on the front line with respiratory clients. Many of these physiotherapists would have been working in other clinical areas and had indicated that opportunities to refresh their respiratory skills would be welcomed.

With my colleagues from RCSI, UCC, TCD and UCD, we worked from a list of identified training priorities developed by the ISCP. I developed about a dozen videos covering the basics of respiratory physiotherapy with supporting resources. These were then hosted on the ISCP website where they were freely accessible by members. Other Covid-19 specific learning resources were provided by my colleagues in the other HEIs. Since this project, we have maintained our connection and expanded the group to include module leaders in respiratory physiotherapy in Northern Ireland. We are currently finalising a publication on the alignment of cardiorespiratory physiotherapy curricula across the island of Ireland.



Household medication practices during the Covid-19 pandemic

Dr Dervla Kelly

Lecturer in Medical Education, School of Medicine, UL



A team of researchers which includes Dr Dervla Kelly from the School of Medicine and ULCaN (University of Limerick Cancer Network), the Health Research Institute, UL as well as members from the School of Pharmacy and Pharmaceutical Sciences, Trinity College Dublin; Centre for Medication Safety and Service Quality, Imperial College Healthcare NHS Trust, London; University College London School of Pharmacy and the Centre for Innovative Human Studies, Trinity College Dublin are researching household medication practices during the Covid-19 pandemic.

Those who are staying at home and reducing contact with other people during the Covid-19 pandemic may be at risk of medication-related problems.

Our study is exploring household medication practices by and for this population, to identify any practices that may support medication safety in this context. Dervla Kelly is leading a scoping review. We also interviewed people who were advised to shield/cocoon and/or aged 70 years or over, and are using at least one long-term medication, or their caregivers.

Recruitment took place in the Republic of Ireland, including Limerick, and England. One hundred patients/carer participants were interviewed.

Data analysis is ongoing and involves our partners Family Carers Ireland. Participants reported a wide diversity of experiences in managing medicines during the pandemic. For some participants there were few changes to medicine practices or a smooth change to a new routine.

For others, the pandemic served as a tipping point, exacerbating difficulties in medicines management that were already present. The findings suggest that the pandemic is causing medication safety challenges for some patients, particularly those who were already experiencing some difficulties before the pandemic.

<https://bmjopen.bmj.com/content/10/11/e044441>



The response to Covid-19: Awards Success

DISECT: Deep Immunophenotyping combined with Spatial profiling and integrated RNA sequencing to Explain the Complex Tissue pathophysiology of Covid-19

Funder:

Science Foundation Ireland – Covid-19 Rapid Response Programme

Principal Investigator (PI):

Prof. Paul Murray, Professor of Molecular Pathology, Health Research Institute, UL

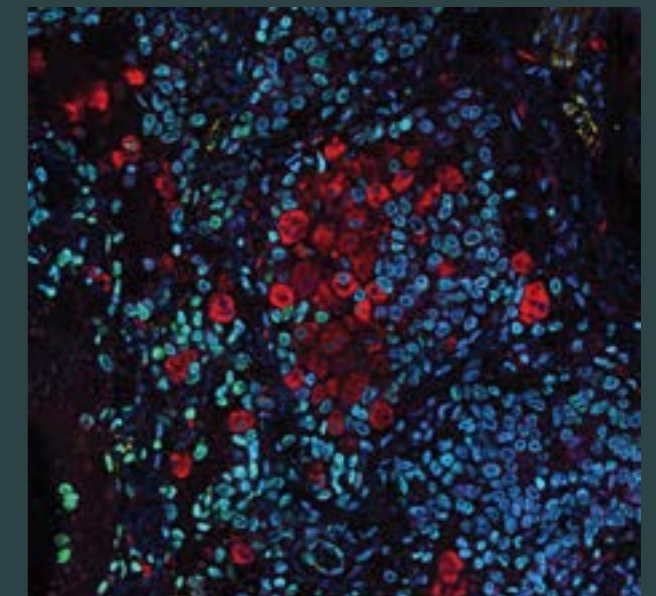


At the time of writing, the novel coronavirus disease, Covid-19, has been reported in >200 countries and territories, and is responsible for a total of 137 million cases and almost 3 million deaths. Although a worldwide vaccination effort is proving successful, the virus will continue to cause significant morbidity and mortality in the years to come, especially in those either not eligible for vaccination or for whom vaccination will not generate adequate protective immunity. Moreover, the long-term respiratory sequela (termed “Long-Covid”) affect approximately 76% of hospitalised patients and one-third of non-hospitalised symptomatic patients.

To date our understanding of the complex immune dysfunction in Covid-19 patients has come from studies of the systemic immune response to the virus through the sequencing of blood cells. In this project we focus attention on the real site of disease- the tissues. We will use state-of-the-art technologies, including next generation sequencing (NGS) and our new CODEX platform to create a map of virus-host interactions in target organs. In this way we will improve our understanding of the host response to SARS-CoV-2 as well as the long-term damage that occurs in some people. Collectively, the results of these experiments will:

- i. Describe how the virus interacts with the host cells of the lung.
- ii. Identify the cellular processes responsible for “Long-Covid”.
- iii. Provide clinicians with a more defined picture of the disease state, resulting in better patient therapy and care.

This project is led by **Prof. Paul Murray** of the Health Research Institute with his post-doctoral researchers **Dr Éanna Fennell**, **Dr Aisling Ross** and **Dr Lucia Mundo**. The research also involves the expertise of **Dr Graham Taylor** and **Dr Matthew Pugh** (University of Birmingham), **Dr Lydia Lynch** and **Prof. Kingston Mills** (Trinity College Dublin), **Prof. Lorenzo Leoncini** (University of Siena), **Prof. Vittorio Fineschi** (University La Sapienza of Rome), **Prof. Falko Fend** (University of Tübingen), **Dr Arjan Diepstra** (University of Groningen) and **Prof. Phillip Jermann** (University Hospital Basel). Our two industrial partners, **Akoya Biosciences Inc.** and **Nanostring Technologies Inc.** are also assisting in the development of some of the technologies we are using in this project.



Covid-19 Lung tissue

RapidInfo4U: A Rapid Resource Repository for Health Professionals (RRR-HP): An online and social media individualised support intervention for return to practice, reassigned and new to practice, nursing and allied health professionals

Funder:

Health Research Board Covid-19 Pandemic Rapid Response Funding Call COV19-2020-080

Principal Investigator (PI):

Prof. Alice Coffey, Professor of Nursing and Lead of the HRI Health Implementation Science and Technology Cluster, UL



Research Team:

Dr Audrey Tierney, Dr Carol-Anne Murphy, Dr Arlene McCurtin, Dr Kevin Johnson, Prof. Sean Redmond, Dr Claire Hickey (Centre for Effectiveness Service), Dr Emma Carr, Post-doctoral Researcher.

Background

The Covid-19 outbreak was declared a pandemic by the World Health Organization on March 11th, 2020. An ongoing challenge in healthcare is ensuring that up-to-date and high-quality research evidence is implemented in practice. In the context of a global pandemic it is assumed, given the increased pressures on healthcare professionals, that this problem has the potential to be exacerbated. Furthermore, the Covid-19 pandemic resulted in many health professionals being reassigned to areas outside their usual scope, returning to practice or commencing their career as new entrants in the midst of a major crisis. These professionals are likely to require additional support to assist their confidence and competence.

Aims

This project had two broad aims:

- to design and deliver an online educational platform to support nursing and allied health professionals in their clinical practice throughout the pandemic
- to evaluate that platform and its implementation.

Progress

We developed the RapidInfo4U platform for health professionals in the fields of Nursing, Occupational Therapy, Speech & Language Therapy, Nutrition & Dietetics and Physiotherapy.

This platform provided access to knowledge relevant to clinical practice in the context of Covid-19 in two ways:

1. Users could ask us a question and our team of researchers and experienced clinicians conducted a rapid evidence search and summary, drawing on a wealth of experience in specific areas to provide a rapid response on queries related to health professional practice and Covid-19.
2. Users could search our Repository which contained carefully selected resources such as government guidelines, professional body recommendations and research evidence to support health professional practice.

To evaluate the online platform and implementation process a programme theory approach will be employed, using a realist evaluation design.



An investigation of psychological responses to Covid-19 in Irish healthcare workers: longitudinal quantitative and nested qualitative study.

Funder:

Health Research Board Covid-19 Pandemic Rapid Response Funding Call COV19-2020-042.

Principal Investigator (PI):

Prof. Donal G. Fortune, Professor of Clinical Psychology, Dept. Of Psychology, UL



Following the outbreak of SARS-Cov in 2002 and MERS-Cov in 2012, SARS Cov-2 (Covid-19) is the third coronavirus to have resulted in significant outbreaks within the past 20 years and is certainly the most significant in terms of its worldwide reach, rates of infection and death. We know that individuals who work within our healthcare settings face a broad array of challenges as they respond to the healthcare needs of the population. However key information on the psychosocial responses and needs of such Healthcare Workers (HCWs) in the context of Covid-19 is limited.

This HRB-funded project is a collaboration between UL, the UL Hospitals Group, HSE Mid-West Community Healthcare and the South/Southwest Hospital Group and aims to examine a number of key questions in relation to the experiences of HCWs in the pandemic context. For example, we aim to examine how HCWs respond to Covid-19 challenges over time; the possible interplay between HCWs personal beliefs or perceptions about Covid-19, coping, stigma, the nature of their healthcare working environment, and the use of formal and informal support resources that may buffer the potential psychological effects on

their wellbeing. While the nature of working as a HCW during the pandemic and its potential mental health effects on staff have encouraged mental health professionals to be very active and nimble about providing supports, we also aim to examine what may prove helpful in terms of intervention during such events.

The project is gathering longitudinal quantitative and qualitative data and aims to provide key information on the nature of psychological, social and environmental factors for HCWs wellbeing in the context of Covid-19, that may prove helpful in arriving at strategies for supporting HCWs.

Staff associated with the project:



Dr Andrew Wormald
Lecturer in Psychology,
Department of Psychology, UL



Dr Pablo Najt
Post Doctoral Researcher,
UL



Amanda O'Dwyer
Research Assistant and
PhD Student, UL

The Response to Covid-19

- Strategic, Local Collaborations

Rapid Advanced Production Responses to Frozen Supply Chains in Hospitals:

An SFI Covid-19 project to create emergency response solutions using 3D printing

Principal Investigator (PI):

Prof. Leonard O'Sullivan, Rapid Innovation Unit, St. John's Hospital Limerick and School of Design, UL



The Covid-19 pandemic disrupted supply chains worldwide. There was an escalated demand for medical and protective equipment, to the extent that many international supply chains froze.

This led to a shortage of critical supplies across national hospitals, including in Limerick. The SFI funded COVID RAPID (Rapid Advanced Production Responses to Frozen Supply Chains in Hospitals) project identified supply problems experienced in the University Limerick Hospital Group. A design team, led by **Dr Aidan O'Sullivan** and **Mr Kevin O'Sullivan** from the Rapid Innovation Unit, engaged directly with hospital staff to identify the problems, and developed ways to overcome these using 3D printing and other smart manufacturing technologies. The group partnered with the CONFIRM Centre for Smart Manufacturing as part of the project.

Sample achievements in the Covid-19 response by the Rapid Innovation Unit:

- + Designed and coordinated manufacture of 100,000 'Limerick' visors within 2 weeks during the first wave (spring 2020) when these products were not commercially available.
- + Led the design and manufacture of 10,000 respiratory filter adapters.
- + Innovated and coordinated manufacture of intubation protective boxes to protect staff during aerosol generating procedures.
- + Developed a local supply chain for non-invasive ventilator respiratory tubing.

- + Led the development of a 3D printed ventilator tube management system for ICUs.
- + Developed an alternative method (3D printed needle guide) to perform lymph node biopsy in the diagnosis of cancer as an alternative to bronchoscopy (aerosol generating procedure) which were discontinued for a duration during the first wave.
- + Innovated a spirometry exhaust air containment solution to enable respiratory patients to be assessed safely by doctors.

Professor Leonard O'Sullivan, pictured above, an Associate Professor in the School of Design, UL says:

"This project responded to the immediate supply challenges within the healthcare system, in particular in responding to different needs at different stages as they arose. This was particularly important as we moved through different phases of the pandemic, which brought with it different challenges regarding medical supplies and ways of treating patients"



Intermediate Care Facility Research Project (Field Hospital)

The Intermediate Care Facility (ICF) at UL was developed as a contingency facility and a solution to patient flow and crowding challenges experienced in the UL Hospitals Group during the early stages of the pandemic in 2020. It opened in early June 2020 and closed in late October 2020 with capacity for up to 84 beds. During the period of its operation, it treated a total of 188 patients. The ICF provided medical and nursing care and rehabilitation for patients without Covid-19 or those who were post-Covid-19 and no longer infective and whose needs did not require care in an acute hospital. In addition to medical, nursing and healthcare assistant staff, there was an onsite Allied Health Professional team comprising Clinical Nutrition & Dietetics, Occupational Therapy, Physiotherapy, Speech and Language Therapy, Medical Social Work, Pharmacy and a Patient Advocacy Liaison Service (PALS). The ICF facilitated numerous placements for students from UL's School of Allied Health and Department of Nursing and Midwifery with a strong focus on inter-professional education. It also provided students with an opportunity to be involved in student-led wards.

A collaborative qualitative research project, facilitated by the Health Sciences Academy, was developed between academics from UL's School of Allied Health and Department of Nursing and Midwifery and UL Hospitals Group staff members in the Summer of 2020.

The project aimed to capture the experiences of a wide range of stakeholders involved in the ICF from those who conceived it through to those who physically set it up to those who operated it or received care in it. It also aimed to add to the growing body of research on international field hospitals during the Covid-19 pandemic as well as researching inter-professional education and collaboration within a field hospital.

Semi structured interviews and/or focus groups were completed with 80 participants generating 49 data sets. Data analysis is underway supported by an EHS Faculty PhD fee waiver and also involving masters students from the School of Allied Health. Integral to the project is building clinicians' research capacity and practitioners are involved in every stage of the research. Future plans include opportunities to co-author project publications and conference presentations in collaboration with the academic team members.

HRI members include:

Principal Investigator **Prof. Judith Pettigrew** ¹ and **Dr Audrey Tierney** ², School of Allied Health. **Dr Liz Kingston** ³ and **Dr Maria Noonan** ⁴, Department of Nursing and Midwifery. **Prof. Paul Burke** ⁵, UL/UL Hospitals Group Affiliate member and **Fiona Steed** ⁶, UL Hospitals Group.

Other team members are **Miriam McCarthy** ⁷, Health Sciences Academy, **Jordan Balfry** ⁸, School of Allied Health, **Hilary Curley** ⁹, EHS Faculty and **Joanne Mannion** ¹⁰ UL Hospitals Group.

Team Members:





+ research
+ collaboration
+ agility

The response to Covid-19: HRI Clinical Research Support Unit Activity

The HRI-CRSU is a dedicated research facility, based in the Clinical Education Research Centre (CERC) on the grounds of UHL. CERC is a 3442m² building, co-funded by UL and the HSE that focusses on the educational, research and collaborative needs of both UL and University of Limerick Hospital Group academic and clinical communities. The CRSU team is composed of a Clinical Operations Manager, a Quality and Regulatory Clinical Research Associate and Clinical Research Nurse Managers. The unit itself is a state-of-the-art space featuring clinic rooms for research participant interaction, board and meeting rooms and bookable 'hot desk' space for researchers.

The CRSU team is involved in a wide range of studies in areas such as Stroke, Rheumatoid Arthritis, Ageing, Vascular Medicine, Emergency Department Assessment and Intervention and now Covid-19.

At the start of the pandemic, most existing research studies were temporarily paused with the agreement of the Principal Investigators, and prioritisation was given to Covid-19 work.

Examples of such work include:

- + **Sprint SARI:** an international, multi-centre, prospective, short period incidence observational study of patients with severe acute respiratory infection, in participating hospitals and intensive care units (ICUs). Patients with Covid-19 who were admitted to the Intensive Care Unit of UHL and who met the eligibility criteria were admitted to the study.

Principal Investigator:
Dr Catherine Motherway, UHL



L-R: Clinical Research Nurse Manager, **Siobhan Egan** who supports **Dr Catherine Motherway**.

- + **WHO Solidarity Study:** an international clinical trial to help find an effective treatment for Covid-19. The study compares options against standard of care, to assess their relative effectiveness against Covid-19. This is a worldwide study, and it is hoped that by enrolling patients in multiple countries, the Solidarity Trial will rapidly discover whether any of the drugs slow disease progression or improve survival.

Principal Investigator:
Dr Sarah O'Connell, UHL

- + The unit collaborated with the **HSE South National Health Library and Knowledge Service** which led an evidence-based service allowing clinical staff to submit specific questions regarding Covid-19. A rapid review of international evidence was obtained, and an evidence summary provided. The Clinical Research Nurse Managers in the CRSU supported this initiative by reviewing the international evidence and providing editorial support in a clinical capacity to answer staff questions submitted from front line staff working against Covid-19.

Research Excellence

Awards Spotlight 2020



Internationally Funded:

H2020 Origin – RIA (ii) - Photonics systems for advanced imaging to support diagnostics driven therapy, call: H2020-ICT-2019-2, Topic ICT-05-2019

Funder:

The Optical Fibre Dose Imaging for Adaptive Brachytherapy (ORIGIN) project is an initiative of the Photonics Public Private Partnership (www.photonics21.org) and has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement number 871324.



PHOTONICS PUBLIC PRIVATE PARTNERSHIP



Principal Investigator:

Dr Sinead O'Keeffe, Royal Society – SFI University Research Fellow, UL

The Optical Fibre Dose Imaging for Adaptive Brachytherapy (ORIGIN) project addresses the challenges of delivering effective and optimal brachytherapy for prostate and gynaecological oncology, through the introduction of novel optical fibre technology. It brings together a highly multidisciplinary consortium (academia and industry with photonics, engineering, medical physics, radiobiology, and clinical expertise), to develop a new 16-point optical fibre dosimeter array for both Low Dose Rate (LDR)- and High Dose Rate (HDR)- brachytherapy, with novel algorithms to provide 3D dose imaging with source localisation capability. Providing real-time dose information at the time of treatment, with additional information determining the precise location of the radiation source, ensures accurate dose delivery in line with the prescribed treatment.



ORIGIN Project Consortium at Kick-Off Meeting (February 2020)

The further integration of the ORIGIN system with existing clinical brachytherapy delivery systems and treatment planning systems allows for interventions to update the treatment plan, providing a dose-led, patient oriented, personalised radiation treatment.

The project is centred on three pillars, each with specific challenges associated to them.

- + **Pillar I** is centred on the system design and development for dose imaging and source localisation during LDR- and HDR-BT.
- + **Pillar II** is aimed at the system integration within a clinical environment and validation for improved clinical outcomes through adaptive brachytherapy.
- + **Pillar III** focuses on the manufacturability and exploitation of the ORIGIN system for improved sensor design for improved optical signal collection efficiency, higher signal-to-noise ratio (SNR) and repeatable mass-manufacturability.

The ORIGIN project is co-ordinated by **Dr Sinéad O'Keeffe**, UL, and involves clinical partners, (**Galway Clinic** and **Queens University Belfast**), academic partners (**Vrije Universiteit Brussels** and **Università Degli Studi Dell'Insubria**.) and industrial partners (**DoseVue N.V.** and **Eckert & Ziegler BEBIG**).

Internationally Funded:**IDEA-FAST Project****Funder:**

IDEA-FAST (Identify Digital Endpoints to Assess Fatigue, Sleep and Activities of Daily Living) is co-funded by the European Union (represented by the European Commission) and the European pharmaceutical industry (represented by EFPIA, the European Federation of Pharmaceutical Industries and Associations) under the Innovative Medicines Initiative Joint Undertaking (IMI JU) programme.



Prof. Norelee Kennedy, Vice President for Research, UL

HRI member Prof. Norelee Kennedy is part of an EU Innovative Medicines Initiative funded project that is developing digital endpoints for fatigue in several neurodegenerative and inflammatory disorders, led by **Prof. Fai Ng**, Newcastle University.

Professor Norelee Kennedy, is the Limerick project lead at UL with **Professor Alexander Fraser**, Consultant Rheumatologist, UHL. IDEA-FAST will develop digital endpoints for fatigue in neurodegenerative disorders (NDD) Parkinson's disease and Huntington's disease and in immune-mediated inflammatory diseases (IMID) rheumatoid arthritis, systemic lupus erythematosus, primary Sjögren's syndrome and inflammatory bowel disease. Fatigue and sleep disturbances are

common and disabling symptoms that affect patients with NDD and IMID, impacting on daily activities and are the major causes of poor quality of life and increased healthcare cost. Current questionnaire-based approaches to measure these symptoms have key limitations preventing them from being used as reliable endpoints in clinical trials to evaluate the effect of therapies. Based on the advancement of wearable and portable digital technology, the IDEA-FAST project aims to address these issues by identifying novel digital endpoints for fatigue, sleep disturbances and disabilities in daily activities. Such digital endpoints will eventually improve the efficiency of clinical trials, ultimately reducing the time and cost to bringing new therapies to patients.



IDEA-FAST project kick-off meeting, Newcastle, February 2020

The large consortium of 46 members from 14 different European countries, includes pharmaceutical companies, academic and not-for-profit institutions, SMEs and patient organisations. The Limerick partners were awarded €370,000 from the overall €42m grant and are involved in two clinical work packages that involves a feasibility study and a clinical validation study. The Clinical Research Support Unit will provide valuable support in the study and will work with ECRIN, the European Clinical Research Infrastructure Network which is also a partner in the project, to support the Limerick involvement in IDEA-FAST. For more see <https://ideafast.eu>.

This study presents an exciting opportunity for Limerick to be involved with the leading academic and pharmaceutical companies in the world in cutting edge clinical research. The bringing

together of digital and clinical elements of research through this innovative programme builds on Limerick's recognition internationally as a leader in the area of measuring clinical data in rheumatology. It also reflects the shift in clinical trial design and methodologies to using digital data to inform decision making. The involvement in the IMI scheme is also a first for Limerick and an important achievement on the funding landscape nationally and internationally. Collaboration of this scale and reach is valuable for the University in its ambition to be globally connected.



Prof. Alexander Fraser
Consultant Rheumatologist,
UHL

Internationally Funded:**GO GREEN: Resilient Optimal Urban natural, Technological and Environmental Solutions****Funder:**

European Union - Programme H2020, call: H2020-SC5-2019-2

Principal Investigator:

Prof. Alan Donnelly, Professor in the Department of Physical Education and Sport Sciences, UL



HRI researchers are major partners in the European Commission funded €10.5 million Horizon 2020 project "GoGreenRoutes". The project is part of a European development which applies visionary and integrated solutions to improve the health of residents of cities. GoGreenRoutes is a 40-partner European project which will develop and test nature-based solutions to improve the health and wellbeing of residents of cities across Europe ([GGR | Home \(gogreenroutes.eu\)](https://gogreenroutes.eu)).

The project pairs participatory approaches and citizen science with Big Data analyses and digital innovation to co-create "Urban Well-being Labs" in six "Cultivating Cities": Burgas (Bulgaria), Lahti (Finland), Limerick (Ireland), Tallinn (Estonia), Umeå (Sweden) and Versailles (France). These pioneering cities are implementing

"nature-based solutions" such as green corridors, linear parks, pocket parks and shared walkways to enhance the physical and mental health of their urban residents. By maximising the available public space people can move around the city more actively, enjoy their free time and interact with others, whilst there is also room for restoring ecologically valuable spaces.



Professor Alan Donnelly is Principal Investigator of the Limerick component of the GoGreenRoutes project, worth €1 million to UL over the period 2020-2024. He was co-PI of the full application, working with the project Principal Investigator Dr Tadhg McIntyre, now in Maynooth University. Prof. Donnelly is supported in the project by his colleagues and HRI Members- Prof. **Norma Bargary** (statistical modelling), **Prof. Giles Warrington** (sleep measurement) **Dr Eibhlís O'Connor** (nutrition and sustainability) and **Prof. Stephen Kinsella** (economics). Also involved are **Dr Conor Little** (Governance) and **Dr Elaine Gallagher** (citizen science).

The Limerick team is contributing across the breadth of the GoGreenRoutes project, but the main focus in Limerick is on the Work Package "Move", led by Prof. Alan Donnelly, with Prof. Warrington, Prof. Bargary and Dr O'Connor. The "Move" work package explores the health benefits and the usage of green urban spaces for physical activity, both for recreation and active transport. The research team is applying monitoring technology including under-path counters, exercise apps such as Strava, and body-worn sensors to monitor the usage of urban green spaces for activity in the cultivating cities. Collaborators in Trinity College Dublin are simultaneously monitoring the environmental quality of routes used for physical activity in the cultivating cities, including air quality, allowing a full evaluation of both usage of green and grey spaces and environmental quality exposure.

While physical activity in green routes is likely of positive benefit to health, snacking behaviour linked to green route usage could be detrimental to both health and the environment. To address this, the UL team is working with technology partner **Nutritics** on the development of a phone app prototype to direct users of the Limerick green route towards sustainably produced, nutritious food retail outlets.

The "Move" work package includes a large-scale multi-city randomised controlled trial of the health benefits of exercise in urban green spaces compared to "grey" spaces including urban and suburban streets. The aim of this intervention is to quantify the potential benefits of green exercise on exercise participation levels and on indices of health.

European project funding for the UL based research is supporting three PhD students, a post-doctoral researcher and a research assistant who will collect data both in Limerick and the other cultivating cities for this project. The GoGreenRoutes project will have a positive impact on the residents of Limerick City and will provide important data on the effectiveness of nature-based solutions on health.



Nationally Funded:

Disparities in health outcomes of Chronic Kidney Disease between men and women in the Irish Health System

Transitions of Care in Advanced Kidney Disease

Funder:

Health Research Board - SDAP-2019-036 and ILP-PHR-2019-008

Principal Investigator:

Prof. Austin Stack, Foundation Chair of Medicine, UL and Consultant Nephrologist, UHL



With over 850 million people affected worldwide, Chronic Kidney Disease (CKD) is a global public health concern with substantial impact on patient survival, disability and quality of life. In most countries, including Ireland, between 10-15 percent of adults are affected with kidney disease which in many cases will lead to irreversible kidney failure. If kidney disease is detected early and managed appropriately, the deterioration in kidney function can be slowed or even stopped, and the risk of serious complications can be reduced. This is where the **UL Kidney Research Consortium** steps into the rescue by harnessing the power of Big Data for assessing risk, predicting clinical outcomes, and evaluating treatment benefits.

Led by Professor Austin Stack, Chair of Medicine and Consultant Nephrologist, the **National Kidney Disease Surveillance System (NKDSS) and Quality Assurance (QA) Programme**, was established to tackle the challenge of Kidney Disease in Ireland and leverage the power of large integrated clinical datasets to track kidney disease and its impact in our health system. Embedded in the School of Medicine, and with strong partnerships with UL Hospitals, this innovative programme provides an exciting opportunity to expand our understanding of kidney disease and discover new strategies for prevention at key time points.

With successive funding from the HRB, Professor Stack's group have spearheaded a comprehensive research programme to better understand kidney

disease and its impact in Ireland. The results of these efforts are guiding national and international policies on CKD management and enhancing global initiatives at prevention while at the same time gaining international recognition.

The consortium's research efforts were again rewarded in 2020 with two new research grants from the HRB. The HRB funded study "**Disparities in Health Outcomes of Chronic Kidney Disease between Men and Women in the Irish Health System**" will explore the role of gender in the evolution of chronic kidney disease (CKD) and quantify its contribution to common metabolic complications and to major clinical outcomes in the Irish health system. Using longitudinal datasets from the NKDSS that capture clinical biomarkers of health over time as well as major outcomes, we will for the first time shed new light on the presence and magnitude of health disparities between men and women with CKD.

Transitions of Care

A second and equally important study entitled "**Transitions of Care in Advanced Chronic Kidney Disease**" will explore the reasons that drive the high mortality and morbidity rates that patients endure when they transition from advanced CKD to kidney failure. The transition from advanced CKD to kidney failure requiring dialysis and kidney transplantation carries substantial risk and is associated with a very sharp rise in death rates in the first 6-12 months after dialysis initiation. Leveraging national data from the NKDSS and

registry data with facility-based survey data on current practices, we aim to improve our understanding of the transition of patients from advanced kidney disease to kidney failure in the Irish Health System, and clearly define optimal transition pathways associated with the best patient survival.

The development of the **NKDSS** was key in establishing a robust data surveillance system to track kidney disease and its impact in our health system. This programme demonstrates the enduring value of comprehensive health surveillance systems to monitor disease burden, and complications, as well as evaluate the effectiveness of several treatment interventions.

Partnerships between the National Renal Office, and Health Intelligence Unit of the HSE have served to strengthen UL's footprint in national initiatives while new partnerships with UL's School of Design, and several US centres of excellence including the University of Michigan, Johns Hopkins University, University of Cincinnati, and the Center for Disease Control Atlanta have extended UL's global footprint. With the ongoing support of the HRB, we anticipate these studies will lead to substantial benefits for patients, healthcare providers and policy makers.

Professor Austin Stack is Principal Investigator for the NKDSS and HRB grants with the following co-investigators:

Professor Liam Glynn (General Practice)

Professor Rose Galvin (Physiotherapy)

Professor Collette Cowan (UL Hospitals)

Professor Cathal Walsh (Mathematics & Statistics)

Dr Leonard Browne (School of Medicine)

Professor Hussein Mahdi (Computer Science)

Professor George Mellotte (National Renal Office)

Professor Rajiv Saran (University of Michigan)

Professor Deidra Crews (Johns Hopkins University)

Professor Silva Shah (University of Cincinnati)

Dr Nikka Rios Burrows (CDC Atlanta, USA)

Dr Jon Salsberg (School of Medicine)

Professor Leonard O' Sullivan (School of Design)



L-R: **Professor Austin Stack**, from the National Kidney Disease Surveillance Programme and School of Medicine, UL and **Dr Mohammed Elsayed**, Nephrology Registrar, Young Investigator Award at the 54th European Society of Nephrology.



L-R: **Professor Austin Stack**, from the National Kidney Disease Surveillance Programme and School of Medicine, UL and **Dr Leonard Browne**, Research Fellow, Young Investigator Award 2019, at the 56th European Society of Nephrology.

Nationally Funded:

Implementation of osteoarthritis clinical guidelines together (IMPACT)

Funder:

Health Research Board Emerging Investigator Award (EIA-2019-008)

Primary Investigator:

Dr Clodagh Toomey, Research Fellow, School of Allied, Health, UL



Despite level A evidence from international guidelines and more than 60 randomised controlled trials supporting the efficacy of exercise and education as first line treatment strategies for patients with painful knee and hip osteoarthritis, implementation in clinical practice is suboptimal. This four-year research project will address this gap in care by investigating appropriate implementation strategies to bring an international, evidence-based programme (GLA:D – Good Living with osteoArthritis Denmark) to the Irish healthcare system. To achieve this, a participatory health research approach will bring together a group of expert researchers, patients, health professionals and policy makers to decide on the best strategy to initiate this programme and ensure its sustainability.

Taking a mixed-methods approach, using a hybrid type III implementation design informed by the Consolidated Framework for Implementation Research (CFIR), this research will ask:

- + Can an evidence-based exercise and education programme for hip and knee osteoarthritis be implemented effectively in the public and private Irish healthcare setting?
- + Does this programme improve quality of life, reduce pain, increase physical activity and reduce the burden of the disease at three months and maintained at 12 months follow-up?
- + Can this programme show cost-effectiveness by reducing healthcare utilisation, pain medication and sick leave?

This research has the potential to change the landscape and health service priorities for the management of chronic musculoskeletal disease by ensuring evidence-based pathways are in place that facilitate better outcomes for patients. The pervasive “wait and replace” approach to joint pain has resulted in unacceptable waitlists with few self-management options in the interim. The sustainability of this health-care model is questioned and a policy shift to prescribe early exercise intervention and education, using online and face-to-face methods, can limit progression of the disease, while improving pain, quality of life, physical activity participation and reduce the need for surgery.

The research team includes: **Dr Clodagh Toomey** (primary investigator, School of Allied Health),

Avantika Bhardwaj (PhD Candidate, School of Allied Health, UL), and co-investigators

Prof. Anne MacFarlane (School of Medicine, UL)

Prof. Norelee Kennedy (VPR- UL)

Prof. Liam Glynn (School of Medicine, UL)

Prof. John Forbes (School of Medicine, UL), (University of Southern Denmark) and the IMPACT Steering Committee of patients, clinicians and researchers.



HRI Events 2020

The pandemic meant that the HRI had to adapt quickly to the virtual world of online events and training from April 2020.

Despite this the HRI connected with and trained over 600 participants in the course of 2020. The HRI members' lunches were relaunched as HRI Online Conversations and took place monthly. These Conversations included presentations and panel discussions with both internal and external stakeholders and provided the opportunity for some interaction, query resolution, shared thoughts and connections for future collaborations.

Some examples of Conversation content included:

- + Panel discussion with **Prof. Pat Kiely**, **Prof. Alan Donnelly**, **Prof. Alice Coffey** and **Dr Brian Carson**, all of UL

Subject: Managing Research during Lockdown

- + Panel discussion with leading figures involved in Covid-related activity in the Mid-West, from both UL and UHL - **Mr Tony Moloney** (UHL), **Dr Catherine Motherway** (UHL), **Prof. Leonard O'Sullivan** (UL) and **Prof. Cathal Walsh** (UL).

Subject: Covid-19 - the response to the pandemic in the Mid-West - a conversation with some of the key people leading this activity.

Other conversations covered a variety of topics including:

- + **The Research Funding Landscape and the Impact of Covid-19** (**Dr Imelda Doolan**, HRI Research Funding Officer, UL)
- + **Diversity: A software engineering requirement** - a talk which focussed on developing software, considering specific groups of users: older adults, people who have a mild intellectual and developmental disability, and people who have specific accessibility requirements. (**Prof. Ita Richardson**, UL)

PPI Summer School 2020

The 2020 Public and Patient Involvement (PPI) Summer School took place on 25th and 26th June. The Summer School has become an important annual event for the School of Medicine's PPI Research Unit and the Health Research Institute. It took place online for the first time in 2020 due to the Covid-19 pandemic.

Content was shared and discussed via pre-recorded webinars, discussion forums and live sessions.

Dr Anne Cody from the Health Research Board shared some advice on writing a good PPI section for a grant application.

PPI and research colleagues from the UK gave an account of working together towards service improvement in general practice, and the school finished with a topical panel discussion on PPI in the context of Covid-19.

Over 200 people registered for the PPI Summer School 2020 and the level of engagement and discussion was outstanding throughout.



Training 2020

The HRI was active in **training** provision in 2020 and continued to respond to the needs of its members.

Critical Appraisal Skills Programme (CASPIR)

Educational programmes that were previously delivered face to face were also adapted to a virtual forum, for example Critical Appraisal Skills Programme (CASPIR) Workshops. A typical Workshop describes the mechanisms for optimal critical appraisal of research including systematic reviews and randomised controlled trials. These workshops are now delivered via SULIS - a UL teaching platform. The theory component is pre-recorded, and participants can view and learn key aspects of critical appraisal in their own time prior to joining a two-hour live (virtual) workshop where they have an opportunity to appraise a published paper as part of a team. These courses continued in 2020 with participation from both UL and UHL.

Good Clinical Practice (GCP)

The CRSU conducted seven GCP courses in 2020. The virtual platform allowed increased numbers to attend. Those who attended received a Certificate of Attendance, which is valid for two years and demonstrates each participant's evidence of GCP Training which is a requirement for the conduct of regulated research studies.

The CRSU developed a bespoke training on Good Clinical Practice for Medical Devices based on ISO14155. This course was delivered to the MSc students of Design for Health and Wellbeing in UL.

Statistics Workshops

A series of six statistical workshops was delivered in 2020 by **Dr Ali Sheikhi**, the HRI Biostatistician, for researchers from UL, University Limerick Hospital Group and Mid-West Community Healthcare Organisation. These covered a broad range of statistical methods and techniques used in research.

Funding/Grant Writing

The HRI Research Funding Officer conducted a workshop on the subject of Formulating Your Health Research Proposal, in March 2020.



Academic Achievements

HRI Members supervised a significant number of PhD's during 2020.

59

Doctoral Degrees Awarded

4

Masters Degrees Awarded

Research Programme Update – PPI Ignite

UL was awarded a **'Public and Patient Involvement (PPI) Ignite'** Award from the Health Research Board and Irish Research Council in 2017 to help universities support researchers to **meaningfully involve public and patients in research**. This institutional bid was led by **Professor Anne MacFarlane**, School of Medicine, UL.

Informed by the tradition of **participatory health research**, PPI Ignite@UL was **co-designed** from the start with community and health sector stakeholders:

- + Limerick City Community Development Programme
- + Care Alliance Ireland
- + Health sector stakeholders from University Hospital Limerick Patient Advocacy Liaison Services and the HSE Community Care office.

Together, we have focused on:

- 1 Training** in PPI and participatory health research.
- 2 Networking** to collaboratively set research priorities.
- 3 Progressing policies and procedures** to further strengthen the culture for PPI.

What Have We Achieved?

We provided regular **'PPI Tasters'** at **HRI Members' Lunches** to ensure that members were aware of the capacity building opportunities.

We co-designed **six training workshops**, which are now embedded into UL's Human Resources Training and Development scheme:

- + Introduction to PPI and Participatory Health Research
- + Finding Research Partners
- + Ethics, Governance and Research Agreements in PPI
- + Collaborative Grant Development
- + Collaborative Data Analysis and Interpretation
- + Collaborative Dissemination Planning

Research Impact



We set up an informal, monthly '**PPI Club**' designed to create a 'PPI community of practice' for all UL students and staff.

We co-designed a **Research Fair** in conjunction with **UHL Grand Rounds**. This promoted networking between **HRI cluster leads**, UL health researchers, UHL clinicians and community/patient organisations to encourage new research partnerships that would allow patients and the public to be part of UL research from the beginning.

PPI Ignite@UL funded **Networking Bursaries** allowing HRI members to have dedicated resources to work with patient and community organisations to establish new partnerships or develop existing ones.

In relation to policy, we examined how **current policies in UL** support PPI and what changes could be made to strengthen that support. We secured a **Fulbright Scholarship** with Anne L. Drabczyk, Indian River State College, Florida, USA to support this analysis.

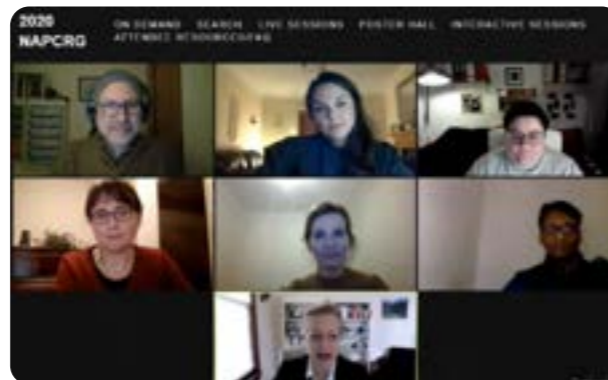
Our partner **Care Alliance Ireland** led the development of guidelines for small sized patient and community organisations about PPI. We disseminated our work at multiple national and international conferences. A highlight was that academic and community partners led a workshop about PPI Ignite@UL at the **virtual 2020 North American Primary Care Research Group (NAPCRG) Annual Meeting**. Feedback from participants was excellent and even prompted a limerick...

*"We all need more patient involvement
to stay intellectually solvent.
The Limerick school shares the best tool,
to create the next research instalment"*

- Bill Phillips, NAPCRG past-president

What's Next?

Dr Jon Salsberg is Principal Investigator for UL in the successful five-million-euro **HRB and IRC PPI Ignite National Network (2021-2026)**. This will provide important resources to continue the work that has started and to strengthen the meaningful involvement of patients and the public in UL's health research.



NAPCRG 2020 presentation of PPI Ignite. It shows UL, Community and HSE partners and the NAPCRG President.

L-R: Pictured at the NAPCRG in November 2020:

Dr Jon Salsberg (UL Senior Lecturer in Primary Healthcare Research),
Meghan Gilfoyle (UL PhD candidate)
Zoe Hughes (Policy and Research Officer, Care Alliance Ireland)
Prof. Anne MacFarlane (UL Professor in Primary Healthcare Research)
Miriam McCarthy (Manager, Health Science Academy, UL & UHL)
Dr Vikram Niranjan (UL Research Assistant), Moderator of the session
Prof. Gillian Bartlett (Professor, University of Missouri, and incoming NAPCRG President).

People

HRI Membership: During 2020, the HRI membership continued to grow, showing a net increase of 19 % versus prior year.

HRI membership consists of three categories:

Full membership:

Full-time, permanent, academic members of staff at UL.

+11%

Postgraduate and Postdoctoral membership: Postgraduate, postdoctoral colleagues and research assistants, whose supervisors are full HRI members.

+43%

Affiliate membership: Health Researchers who are members of UL - affiliated Health Organisations.

+6%

These categories showed an increase in membership of 11 %, 43% and 6% respectively.

The consistent growth in HRI membership reflects our strong multi-disciplinary focus, collaborative ethos and relevance to the early career researcher community.

Increase in
Membership 2020



Selected Member Profiles

Dr James Brown

Membership type: Full



Dr James Brown, Lecturer in Cell Biology/Cancer in the Department of Biological Sciences, Limerick Cancer Research Centre, University of Limerick Cancer Network (ULCaN) Theme co-lead: The Cancer Genome, UL.

I started at as a lecturer in Cell Biology and Cancer in the Department of Biological Sciences, UL in September 2019. As part of the BSc in Bioscience and the new MSc in Biomolecular Science, I teach students fundamental and molecular mechanisms of cancer, and how this knowledge is translated to produce new patient-centred therapies.

The focus of my Oncobiology and Molecular Therapeutics Group is exploring the creation and development of the next generation of targeted cancer research therapeutics, breast cancer biomarker discovery, and dysregulation of genome stability mechanisms in cancer. My group's fundamental research explores new roles for lysine acetyltransferase Tip60 dependent signalling (focusing on the DNA double strand break response). Our translational projects focus on pre-clinical validation of the *in vivo* mechanisms of action of our targeted Tip60 inhibitor, and the discovery and validation of breast cancer biomarkers (including the use of AI-based analysis and AI-driven digital pathology). I recently received a HRI-funded pilot grant, which has been invaluable in allowing me to explore a new and exciting research avenue further defining how our targeted treatment kills only cancer cells.

As a member of HRI, I'm fortunate to be involved with the University of Limerick Cancer Network (ULCaN) as a theme co-lead (The Cancer Genome).

HRI membership has allowed me to witness the exciting depth of multi-disciplinary research being conducted at UL and has facilitated me in building local networks of collaborators in UL, driving forward new exciting paths for my research.

The various HRI-supported seminar series keep me up to date with both exciting new research in UL and advances worldwide with their invited speakers.

The supports from HRI have allowed me to improve my research impact and contribute to the vibrant and dynamic Cancer Research Centre here at UL.

making an impact on patient health & wellbeing

Dr Katie Robinson

Membership type: Full



I am a Senior Lecturer in Occupational Therapy and Course Director for the Structured PhD and MRes programmes in the Faculty of Education and Health Sciences and founding member of the HRI funded Ageing Research Centre at UL. My research focuses on occupational therapy, rehabilitation, ageing and qualitative research methods.

I have personally benefited greatly from HRI membership. The HRI has established a collegial culture that values inter-disciplinarity, promotes excellence and impact while simultaneously prioritising the needs and preferences of health research stakeholders.

The HRI Research Funding Officer **Dr Imelda Doolan**, has given me hugely valuable support when submitting research grants. Imelda's knowledge of funding calls and internal processes

and her support of the writing process is an invaluable resource to access as a PI.

The HRI has given me opportunities to network and build research collaborations.

In 2020 the HRI members lunches pivoted to online conversations and the quality of topics and speakers has continued to be impressive. The opportunities to build relationships and collaborations through the HRI have continued despite the pandemic. For example, in 2020 I was fortunate to be able to collaborate with HRI member **Dr Jon Salsberg** (SL in Primary Health Care) and learn from his expertise in Public and Patient Involvement in collaborative analysis of qualitative data.



Ms. Meghan Gilfoyle, MSc

Membership type: Postgraduate/Postdoctoral



I am a second-year doctoral student based in the School of Medicine in the public and patient involvement (PPI) research unit under the co-supervision of **Dr Jon Salsberg** and **Professor Anne MacFarlane**. I have a keen interest in engaging public and patient groups in health research in a meaningful and collaborative manner to build capacity for PPI, a key theme within the HRI. My PhD research involves using a trust lens and social network analysis to better understand how and why participatory health research partnerships work well, and how to improve them when they do not. Since the start of my PhD, I have worked with various partners involved in the PPI Ignite@UL grant to co-design the research questions for my dissertation, and to inform the development of a social network survey that we are proposing to incorporate in the PPI Ignite Network grant for the next stage of the PhD research. Specifically, we hope to use the social network survey to understand the evolution of trust and collaboration between partners within the PPI Ignite National Network over the course of the grant.

I joined the HRI as a postgraduate member in 2020 and have already enjoyed a wide range of membership benefits, even while in a predominantly virtual capacity.

Specifically, as networking and support quickly shifted from in-person to online platforms, I increasingly recognised the need for additional opportunities to collaborate and learn with HRI peers,

especially those at similar stages of their research career. Thus, I reached out to the HRI to advise on and support the development of a collaborative space for postgraduate/postdoctoral HRI members. The support was essential in necessitating what is now an evolving platform for PG/PD members (the HRI PG/PD Hub) to come together on an ongoing basis to take part in shared learning and networking opportunities of interest, as informed by the group.

The evolution of this platform, which I anticipate will continue to progress into a more formalised space, with a range of PG/PD committee members informing its development, would not be possible without the support of the HRI and its diverse membership. I look forward to continuing to grow as a researcher and contributor to the HRI.

Ms. Louise Carroll

Membership type: Postgraduate/Postdoctoral



I am starting my final year of the structured PhD programme within the Faculty of Education and Health Sciences. I work as a senior physiotherapist with St. Gabriel's Children's Services, which has a state-of-the-art hydrotherapy pool on site. My passion for research began due to a specialist interest in delivering effective aquatic exercise programmes for people with chronic neurological conditions like Parkinson's disease.

Parkinson's disease is estimated to affect over 12,000 people in Ireland and is the fastest-growing neurodegenerative condition globally. Aquatic therapy is one physiotherapy approach used to target and improve Parkinson's disease-related impairments, including mobility, balance, gait, falls, posture, and quality of life. Under the supervision of **Dr Amanda Clifford** (HRI), **Professor William O'Connor**, School of Medicine, UL and **Professor Meg Morris**, La Trobe

University, Melbourne Australia, my PhD project first explored key components of aquatic therapy delivery, including optimal dosage and prescription for Parkinson's disease (Carroll et al. 2020). We also investigated factors that influence people with Parkinson's disease to participate in this form of therapy internationally. This article is due for publication in the journal *Disability and Rehabilitation* (2021). We plan to develop international aquatic therapy guidelines based on research evidence, patient preferences, and international expert consensus for healthcare professionals working with people with Parkinson's disease.

Since joining the HRI in 2020 and the HRI funded Ageing Research Centre (ARC), I have found the support and opportunities to engage in online meetings with a broad network of postgraduate, postdoctoral, and leading researchers to be invaluable for developing my research skills.

I am grateful to the HRI for supporting my research, particularly **Dr Jon Salsberg** and **Dr Ali Sheikhi**, for providing patient and public involvement (PPI) and statistical advice.

Carroll, L.M., Morris, M.E., O'Connor, W.T. and Clifford, A.M. (2020) 'Is Aquatic Therapy Optimally Prescribed for Parkinson's Disease? A Systematic Review and Meta-Analysis', *Journal of Parkinson's Disease*, 10(2), 59-76, available: <http://dx.doi.org/10.3233/JPD-191784>.



Investing in Our Members

HRI Funded Research Clusters Update 2020

The HRI provided funding to six clusters- four large and two emerging- in 2018. The aim of this investment is to develop focused areas of research with an emphasis on global and societal challenges.

The clusters completed year two of the programme in 2020 and an update on each now follows.

PHYSICAL ACTIVITY

Physical Activity for Health (PAfH)

Principal Investigator: **Professor Alan Donnelly**

→ www.ul.ie/hri/physical-activity-health-pafh

Summary

PAfH is a hub for Physical Activity (PA) research excellence and brings together a multidisciplinary group of physiologists, sports and exercise scientists, physiotherapists, and health, sports and exercise psychologists. PAfH focuses on:

- 1 Research Excellence and Impact,
- 2 Collaboration and Networking
- 3 Capacity Building and Training

across four thematic areas:

- + PA and Exercise as Medicine
- + Biomedicine of PA
- + Policy Impact and Implementation of Effective Interventions
- + Measurement, Surveillance and Determinants of PA

Research Impact

The PAfH research cluster enhanced its research funding in 2020.

Ten research grant applications were submitted in 2020, with an average of three PAfH core members collaborating on every grant (range 1-6). Four applications were successful, generating an income of €2,527,150 million to UL and PAfH and resulting in six research/admin staff and three PhD students.

In 2020, PAfH cluster members published >65 peer-reviewed publications. Whilst not all of these publications are directly related to cluster funding, some are, and it is planned that the grant applications approved and planned for year three will result in more cross-cutting publications.

PAfH maximised its national and international networks and reputation in 2020. Despite Covid-19 limitations, PAfH managed to create an international mailing list of **>350** people, and to move its 'speaker programme' online.

It ran **eight webinars** with national and international speakers covering a broad range of relevant topics – e.g., Covid-19, Cancer, Dance, Measurement, Children - and attracted an average webinar attendance of >330 participants (Figure 1).



FIGURE 1

In addition, PAfH collaborated to host 'joint webinars' internationally e.g., the ISBNPA (International Society of Behavioral Nutrition and Physical Activity) and nationally e.g. I-PARC (Irish Physical Activity Research Collaboration) to extend its reach and reputation.

PAfH won the bids for **two international conferences** to be hosted in UL. In 2022, the 'International Association for Dance Medicine & Science' will attract a global network of medical professionals, educators, dancers and researchers (Figure 2).



FIGURE 2

In 2023, the 'International Conference on Diet and Activity Methods' will attract researchers focused on improving high-quality and novel research to advance methods for assessing diet and physical activity (Figure 3).



FIGURE 3

PAfH set up a PPI panel, in collaboration with Limerick and Clare Local Sports Partnerships, and with support from PPI Ignite@UL. This panel is working with PAfH on their strategy for 2021 and beyond and have already been helpful in providing feedback on PAfH Health Research Board applications (Figure 4).



FIGURE 4

PAfH also catered for its 42-affiliate student, postgrad. and early career researcher membership with lunch time training and mentoring meetings.

Covid Impact

Covid-19 had a significant and negative impact on PAfH in 2020.

Research programmes were cancelled -due to no, or very limited, access to laboratories, or were postponed -due to limited access to participants, e.g., school closures. This has directly affected our ability to collect data, to analyse data and to produce expected outputs. This will have consequences for staff retention, for staff recruitment, for output generation and for delivery of planned research work.

Adaptations were made to research protocols e.g., collecting research data online where possible via questionnaires or online interviews.

Pivoting involved moving the PAfH speaker programme online and also moving the PAfH training online.

However, the long-term impact of Covid-19 restrictions -as of yet not fully known - on core members has been significant. Balancing 'home' responsibilities while continuing to deliver on 'work' goals, tasks and ambitions has been daunting.

In addition, there has been significant negative impact on research delivery (requirements for full cost and no cost extensions are needed), future research development (pilot work incomplete, compromised), research output (publications, supervision of PhD students, research staff impacted), capacity building (e.g., PAfH intended summer and winter schools have been postponed), and recruitment (quality and quantity of research staff diminished).

AGEING

Ageing Research Centre (ARC)

Principal Investigator: **Dr Katie Robinson**

→ www.ul.ie/hri/ageing-research-centre-arc

Summary

The interdisciplinary Ageing Research Centre brings together academic researchers, clinical colleagues and older adults to conduct excellent research that leads to improvement in the health, well-being and social inclusion of older people.

Research Impact

The Ageing Research Centre had a challenging but hugely productive year in 2020.

We hosted two very well attended and positively evaluated online events with external colleagues.

Professor Des O'Neill from Trinity College Dublin presented on 'Understanding Ageing through the Humanities and Arts' and **Professor Peter**

O'Sullivan from Curtin University presented a seminar on 'Managing Pain in Later Life'.

We ran a number of capacity building events including an information evening on PhD research, and online seminars on writing for publication (**Dr Pauline Meskell & Dr Kieran O'Sullivan**) and advice on securing research grants (**Prof. Ita Richardson & Dr Sara Hayes**).

The ARC team collaborated on numerous publications in 2020 and some highlights included the following publications:

- + Dr Kieran O'Sullivan, Dr Mary O'Keefe and Dr Helen Purtill published the results of a RCT of a back pain treatment in the British Journal of Sports Medicine (IF = 12.68)

- + O'Keefe, M., O'Sullivan, P., Purtill, H., Bargary, N. and O'Sullivan, K., 2020. Cognitive functional therapy compared with a group-based exercise and education intervention for chronic low back pain: a multicentre randomised controlled trial (RCT). *British Journal of Sports Medicine*, 54(13), pp.782-789.
- + Dr Sara Hayes and Daniel Carter were co-authors of the updated Cochrane review of Physical Fitness Training for People Living with Stroke.
- + Saunders, D.H., Sanderson, M., Hayes, S., Johnson, L., Kramer, S., Carter, D.D., Jarvis, H., Brazzelli, M. and Mead, G.E., 2020. Physical fitness training for stroke patients. *Cochrane Database of systematic reviews*, (3).

Covid Impact

While the Covid-19 pandemic disrupted some plans, the Ageing Research Centre has responded to the pandemic by embracing opportunities to mitigate the impact of the pandemic on older adults.

Unfortunately, our scheduled workshop with **Dr Adam Geraghty** and summer school with Prof. Bethany Bray were postponed. Several

other events pivoted to on-line delivery and our fortnightly lunchtime meetings have continued offering a supportive environment to share experience and helping to build a culture of research excellence.

Throughout the pandemic we have continued working with our stakeholder panel of older adults and family carers (pictured below in February 2020 at our kick-off meeting) via telephone and we have collaboratively conducted research and worked with the panel on a number of research grant applications in 2020.

As mentioned earlier in this annual report, **Dr Pauline Meskell** together with colleagues published a rigorous, and already highly cited, rapid Cochrane review in April 2020 on barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases.

- + Houghton, C., Meskell, P., Delaney, H., Smalle, M., Glenton, C., Booth, A., Chan, X.H.S., Devane, D. and Biesty, L.M., 2020. Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis. *Cochrane Database of Systematic Reviews*, (4).



February 2020 kick-off meeting – ARC working with their stakeholder panel of older adults and family carers.

Improving the health,
well-being & social
inclusion of older people.

CANCER

University of Limerick Cancer Network (ULCaN)

Principal Investigator: **Professor Pat Kiely**

→ www.ul.ie/hri/university-limerick-cancer-network-ulcan

Summary

Our cluster is focused on developing a research network that facilitates project design and development between multidisciplinary teams working along the 'The Cancer Journey'.

The cluster has four component pillars:

- + Patient Perspectives in Cancer
- + Biomedical Science
- + Clinical Trials and Interventions
- + Processes and Workflows

Research Impact

Over the last 18 months, we have made significant progress in interacting with stakeholders in the cancer care area, including organised meetings with patient advocacy groups, health care providers and cancer support workers.

This has led to the assembly of a team of researchers with the collective objective to focus on four main areas of the cancer journey.

These are:

- + Communication,
- + Knowledge & Attitudes to Exercise,
- + Nutrition
- + Palliative Care

This team is designing surveys, holding meetings and expanding the network to get a better understanding of the areas and to explore potential gaps in the cancer care provision space.

Across Pillar 2 (Basic Biomedical Science) we have developed a strong understanding of our members' research activities. Our members have been very active in their grant writing/submissions and the group has secured significant funding from diverse funding sources. The ULCaN cluster is proving to be

a supportive network, and several of our members are now publishing together and are engaged in several collaborative projects which is benefiting the HRI and UL generally. As the activities and research themes from patient perspectives in cancer and biomedical science projects emerge, we are now informing the other pillars (Clinical Trials/ Interventions and Processes and Workflows) in a more focused and meaningful way.

Central to our approach is the building of collaborations across the cancer research community in UL, UHL and in the region. We have held several meetings with stakeholders in UL and UHL and we have positioned ULCaN as a major and driving stakeholder within the new Limerick Cancer Research Centre. As well as this, we are now in a much better position to contribute to national cancer research initiatives as a unified group of researchers. We are using every opportunity to highlight our activities and objectives across UL and to engage with several industries regionally and nationally. We strongly believe that this will have significant impact for ULCaN and the HRI going forward and will place our cluster members at the centre of emerging cancer research projects and novel collaborations.

Covid Impact

The current pandemic has had a major impact on our proposed meeting and workshop schedule, our focused group meetings and laboratory-based research. However, we will be organising a series of workshops in response to the changing needs of our cluster members.

We have an exciting seminar series running online currently that is available to all campus staff and students and the cluster has funded a number of pilot projects which are functioning to build collaborations and generate preliminary data.



IMPLEMENTATION SCIENCE

Health Implementation Science and Technology (HIST) Cluster

Principal Investigator: **Professor Alice Coffey**

→ www.ul.ie/hri/health-implementation-science-and-technology-hist

Summary

The aim of our multidisciplinary cluster is to promote and build capacity, strengthen knowledge and build expertise in the field of Implementation Science with ICT through research, collaboration, and capacity building, and to develop shared principles and a common approach to guide our implementation collaborations and research into the future.

Research Impact

Despite the pandemic the HIST cluster had a very productive year. We hosted two major seminar events in Implementation Research:

- + 17th January 2020: Seminar on the EU Funded **ImpleMentAll project** with **Prof. Heleen Riper** and **Christian Vis** from VU University Amsterdam, Netherlands.
- + 22nd Oct 2020: **Theory driven participatory implementation science** with implementation scientists: **Prof. Carl May**, London School of Hygiene and Tropical Medicine; **Prof. Tracy Finch** Professor of Healthcare & Implementation Science, Northumbria University UK; **Prof. Anne McFarlane** and **Dr Jon Salsberg PPI** Ignite, UL. (Online)

Both seminars were opened and facilitated by international experts in Implementation Research and were very well attended.

In 2020 HIST continued to disseminate research outputs through 35 published research papers and 12 conference presentations.

The HIST cluster achieved success in **Research Funding** from the Health Research Board: HRB Covid-19: Rapid Resource Repository for Health Professionals. **Prof. Alice Coffey** (PI) €199,646.86

To progress our goal of Capacity Building, the HIST cluster commenced a cross-disciplinary training programme in Implementation Science.

The aims of the training programme are to:

- + Bed-in fundamental methodologies for tackling implementation research questions
- + Collectively agree a set of guiding principles that will characterise the HIST cluster approach to implementation research.

The programme is delivered in collaboration with the Centre for Effectiveness Services (CES) Dublin-experts in implementation research.

Small grants awards:

The HIST cluster awarded seed funding of €15,000 each to four pilot projects using implementation science methodology in 2020. These were:

- + Establishing acceptability and feasibility of classroom observation tools in supporting children with speech and language needs in school. **Dr Aoife Gallagher** (PI)
- + Establishment of *Be-Wheel Well* Centre. **Dr Rosie Gowran** (PI)
- + Developing intergenerational learning through discussion cafés. **Dr Dympna Tuohy** (PI)
- + Providing reasonable adjustments for healthcare delivery for persons with Intellectual Disability in acute care. **Dr Owen Doody** (PI)

HIST Demonstrator projects:

- + **MEDRA: Mediterranean Diet and Rheumatoid Arthritis:** **Dr Audrey Tierney** (PI) Using the RE-AIM framework for evaluation – in progress.
- + National Speech & Language Therapy Project in Schools: **Dr. Carol-Anne Murphy** (PI).

Using a Knowledge to Action Framework – a two-tiered intervention. The intervention has ethical approval and is underway but delayed due to Covid.

Covid Impact

The pace and progress of all research project work affiliated to the HIST cluster has been delayed for several months due to Covid-19. Data collection has been particularly challenging due to the difficulty with access to clinical and educational sites. Nevertheless, projects have adapted, continuing with desk research to progress and in some instances adopting online methods of data collection where possible.

The opportunity for conference attendance was curtailed earlier in the pandemic due to the cancellation of many events. In the latter half of the year as events and conferences adapted to online delivery, the cluster succeeded in hosting and attending several events.

On the positive side the HIST cluster was awarded HRB Covid-19 rapid response funding in May 2020

for a project titled: **A Rapid Resource Repository for Health Professionals (RRR-HP)**

As mentioned earlier in this report, our project aimed to design and deliver an online educational platform to support nursing and allied health professionals in their clinical practice throughout the pandemic many of whom were reassigned to areas outside their usual scope and to evaluate that platform and its implementation.

We developed the website **www.rapidinfo4u.healthcare** (no longer live) wherein we provided an individualised online resource and evidence-based answers to individual clinical questions for nursing and allied health professionals about practice during the Covid-19 pandemic. The project progressed well, and we are about to commence evaluation.



HIST Management Group, all UL



Prof. Stephen Gallagher



Prof. Alice Coffey (Lead)



Dr Pepijn Van de Ven



Dr Audrey Tierney



Dr Carol-Anne Murphy



Prof. Sean Redmond



Dr Arlene McCurtin



Dr Selena O'Connell

DESIGN & THE ARTS

Product Design and the Performing Arts (PD+PA)

Principal Investigator: **Dr Louise Kiernan**

→ www.ul.ie/hri/product-design-and-performing-arts-pdpa

Summary

This cross-disciplinary research cluster provides the collective thinking of Design, Allied Health and Business to deliver market-driven and user-centered product/service innovations for the performance arts. The cluster aims to develop and commercialise products in this area. We have projects currently at the research and design phase.

Research Impact

Project 1: The Hard Irish Dancing Shoe, is it Fit for Purpose?



Studies 1 – 4 completed:

- 1 Observations and interviews at international Irish Dancing Feisenna.
- 2 Video analysis of 28 dance steps.
- 3 Usability/performance analysis - donning and doffing of the shoe.
- 4 Biomechanical testing of underfoot forces and lower extremity movement kinematics.



Biomechanics force testing with the heavy shoe in the lab

Project 2: SOVT Semi-Occluded Vocal Tract - Voice Therapy

Study 1 - Complete – concept development and early prototype.

Study 2 – Stage 1 of 3 complete - Primary research with voice and speech and language experts.



Project 3: SOVT Irish Dance Light

Study 1 – Stage 1 of 2 complete interviews with dancers from the IWAMD (the Irish World Academy of Music and Dance)

Conference papers

Ni Bhriain, O. and Cahalan, R., 2020. The Evolution of Irish Dancing. In: R. Cahalan, ed., Complete Irish Dancer, 1st ed. New York: NOVA.

O'Mahony M, Kiernan, L. White, E, Ni Bhriain O, and Hartigan, B. An Analysis of the Design Process: A Case Study of the Development of a Vocal Health Tool, submitted to ICAEMUE 2021: 15. International Conference on Advances in Ergonomics Modelling and Usability Evaluation. July 22-23, 2021, Tokyo, Japan.

Hartigan, B., Ni Bhriain, O., Kiernan, L. A biomechanical analysis of the Kinetics and Kinematics for eight elite Irish dancers forcefully performing loud high-impact steps. Submitted to IADMS 2021.

Hartigan, B., Ni Bhriain O., Kiernan, L. How the Hard Irish Dancing Shoe may be contributing to lower limb Injury in Elite Irish Dancers. submitted to IADMS 2021.

Journal papers

Ni Bhriain O., Fahey, H, Turner, K. Hartigan, B., Kiernan, L. "The Creative pedagogy of Process" submitted to Thinking skills and Creativity.

Covid Impact

Due to Covid-19 events and travel were postponed. Travel did not take place for training, trade fairs or conferences.

The cluster has focused on developing the three projects and extra resources were hired to do this along with investment in materials, equipment and

upskilling. Events that could take place online went ahead such as the collaboration event between School of Design and Irish World Academy of Music and Dance students. The workshop provided a forum for musician and dancers to outline many issues associated with their disciplines to design students who were looking for design project opportunities for their FYPs.

We therefore have a sustainable pedagogical pathway from undergrad. modules, to postgraduate and doctoral programmes.

Budget Reallocation: Under spend was reallocated to year 2 and to projects 2 & 3 for resources, materials and equipment.

PD & PA
PRODUCT DESIGN
PERFORMING ARTS

CO-DESIGN
WORKSHOP

PROJECT
PROPOSALS

16-10-2020

Contributors

<p>Erik Higgins Double Bass</p> <p>Need for better mobility when performing</p>	<p>Ethan Kesby Irish Dance</p> <p>Need for space and quiet dancing when practicing at home</p>
<p>Sarah Fox Fiddle</p> <p>Foot tap pedal for rhythm which doesn't get picked up when recording</p>	<p>Grainne Buckley Harp</p> <p>Water blisters forming on the fingers of harp players</p>
<p>Kelsey Schulte Irish Dance</p> <p>Overcoming the delay when teaching dancing Online.</p>	<p>Hannah Fahy Singing</p> <p>Need for saving a singers mouth when teaching using a singers mask.</p>
<p>Loretta Coyne Trot Flute</p> <p>Screen for blocking all vapours from wind instrument practicing</p>	<p>Roisin Mcguinness Viola</p> <p>Glasses fogging up and mask getting pushed up from the chin rest for violins. 4-6 year olds dont have masks suitable either</p>
<p>Grainne Rynne Box Accordion</p> <p>Need for a better ergonomic solution for sitting playing the box.</p>	

Online event between School of Design and Irish World Academy of Music and Dance students

MIGRANTS IN HEALTH RESEARCH

Participatory and Arts-Based Methods Involving Migrants in Health Research (PART-IM)

Principal Investigator: **Professor Helen Phelan**

→ www.ul.ie/hri/participatory-and-arts-based-methods-involving-migrants-health-research-part-im

Summary

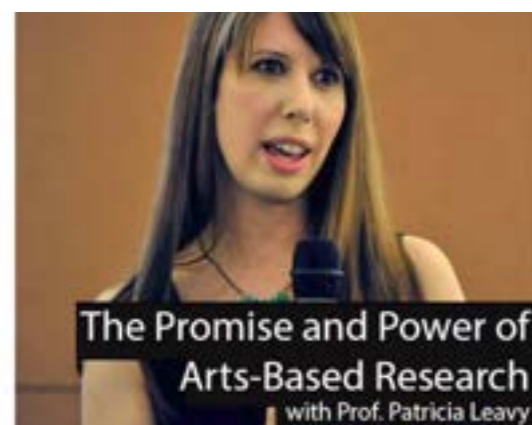
This cluster brings together arts-based and participatory scholars from medicine, nursing and midwifery, and the performing arts, as well as a leading NGO for migrants.

Our vision is to develop increased understanding of the role of **arts-based methods as participatory strategies for involving migrants in health research.**

Research Impact

Over 300 participants from around the globe contributed to PART-IM coordinated webinars and symposia in 2020 including:

- + **'The Promise and Power of Arts Based Research'** by internationally renowned author, **Professor Patricia Leavy** (21 October 2020)



- + **'Singing with the Voices of the World: A Symposium on Singing, Health, and Working with Global Voices'** featuring Musicians Without Borders*, Sing Up! UK, the American Institute of Music and Health, and Irish conductor and community singing advocate, David Brophy (14 November 2020).

* Global leaders in using music for peace building and social change



45 people from 10 countries secured competitive places in an over-subscribed five part training programme with *Musicians Without Borders* on **'Singing as a tool for community building in changing societies'**.

The cluster published the protocol on the first ever scoping review on music as an arts-based method in migrant health research (<https://doi.org/10.12688/hrbopenres.13121.1>). Supported by the WHO, we also secured Irish Research Council funding for a new, participatory initiative using the arts and music to generate a research agenda for Ireland about migrant health research.

Covid Impact

A major symposium organised for April 2020 was successfully redesigned as two online events, launched by UL's President, **Professor Kerstin Mey** in October 2020.

Travel funding has been diverted into technical support and enhancing our online profile. The greatest challenge to the work of the cluster has been the transmission risks posed by group singing. The cluster has worked closely with Musicians Without Borders to adapt all training activities for online delivery.



Ecosystem

HRI Executive Committee & Operations Team

Name	Role	Institute/School/Department	Faculty
Prof. Rachel Msetfi*	HRI Director (to November 2020)	Executive Dean, Faculty of Education and Health Sciences	EHS
Prof. Alan Donnelly*	Interim HRI Director (from November 2020)	Dept. of Physical Education and Sport Sciences	EHS
Prof. Ann MacPhail*	Assistant Dean Research	Dept. of Physical Education and Sport Sciences	EHS
THEME LEADS			
Prof. Alan Donnelly*	Theme Lead in Lifestyle & Health	Dept. of Physical Education and Sport Sciences	EHS
Prof. Rose Galvin*	Theme Lead in Health Service Delivery	School of Allied Health	EHS
Dr Pepijn Van de Ven*	Theme Lead in Health Technologies	Dept. of Electronic & Computer Engineering	S&E
OPERATIONS TEAM			
Ms Goretti Brady*	Operations Manager	HRI	
Dr Imelda Doolan*	Research Funding Officer	HRI/Research Office	
Dr Ali Sheikhi	Senior Biostatistician	HRI	
Ms Justyna Lis	Senior Administrator (Clusters)	HRI	
Ms Gene O'Sullivan	Projects Coordinator	HRI	
Ms Sarah Redfern (October 2020)	Administrator	HRI	
CLINICAL RESEARCH SUPPORT UNIT			
Ms Marie-Thérèse Hayes*	Clinical Operations Manager	HRI/CRSU	
Ms María Ryan	Quality and Regulatory CRA	HRI/CRSU	
Ms Elaine Conway	Clinical Research Nurse Manager	HRI/CRSU	
Ms Rita Hinchion	Clinical Research Nurse Manager (to November 2020)	HRI/CRSU	
Ms Siobhán Egan	Clinical Research Nurse Manager	HSE/CRU	
Ms Fiona Leahy	Clinical Research Nurse Manager	HSE/CRU	
Ms Grainne Higgins O'Keefe	Clinical Research Nurse Manager (from December 2020) - WHO Solidarity research study	HRI/CRSU	

* Member of Executive Committee

Note: The HRI Director and Clinical Operations Manager both have a seat on the UL Clinical Research Board (CRB). The CRB reports to the Vice President for Research, UL and is responsible for the oversight of clinical trial governance on behalf of UL, and for ensuring that UL fulfils all sponsorship requirements.



HRI Clinical Research Support Unit (CRSU)

The HRI CRSU has been described earlier in this report.

The Clinical Research Unit (CRU), on the other hand, is a jointly governed and resourced unit- the result of a collaborative partnership between UL and the University of Limerick Hospital Group (ULHG). It was established to bring together academic capacity and clinical expertise to develop a significant portfolio of research projects aimed at positively impacting healthcare delivery locally, nationally, and internationally.

The management of this collaborative unit is through its Management Board, which has equal representation from UL and ULHG, which meets monthly and this is chaired by the Chief Academic Officer/Vice Dean of Health Sciences.

All research projects undertaken by the unit are approved by the Board before they proceed.

CRU Management Board 2020:

Chair: Prof. Paul Burke
Chief Academic Officer, ULHG;
Vice Dean of Health Sciences, UL

Prof. Rachel Msetfi
HRI Director (to November 2020)

Prof. Ruth Clifford
Consultant Haematologist, UHL

Ms Marie-Thérèse Hayes
Clinical Operations Manager, UL

Ms Joanne O'Connor
Clinical Trials Coordinator, UHL

HRI-CRSU/CRU Studies 2020

The following studies were supported by the CRSU in 2020:

Study	Principal Investigator/ Clinical Lead	Funder	Support
MGP: The use of blood- based biomarkers to determine location- specific arterial plaque phenotype in cardiovascular disease: a preliminary study	Prof. Eamon Kavanagh, UHL	HSE	Research Nursing Support, including Consenting, Sample Preparation, Data Entry and Reporting
HighLow Study: Low molecular weight heparin to prevent recurrent venous thrombosis in pregnancy: a randomised trial of two doses	Dr Denis O'Keeffe, UHL	Academic Medical Centre (AMC), University of Amsterdam/ HRB Mother & Baby Network	Study Coordination, Research Nursing Support, Site File Management, Training, Data Entry and Reporting
TILLIRI: Thrombosis in patients with lower limb injuries requiring immobilisation to identify a group with high predictive VTE risk	Dr Denis O'Keeffe, UHL	Industry	Study Coordination, Research Nursing Support, including Training, Data Entry and Reporting
The Mechanical Characterisation of Human Saphenous Vein Tissue	Prof. Eamon Kavanagh, UHL Prof. Michael Walsh, UL	UL/UHL Collaboration	Study Coordination, Research Nursing Support, Including Consenting, Sample Preparation, Data Entry and Reporting
The Role of Unsteady Wall Shears Stress Stimuli on Human Umbilical Vein Endothelial Cells (HUVECs) harvested from Umbilical Cords	Dr Mendinaro Imcha, UMHL Prof. Michael Walsh, UL	UL/UMHL (University Maternity Hospital Limerick) Collaboration	Research Nursing Support, Including Consenting, Sample Preparation, Data Entry and Reporting
Concussion Study: Blood Biomarkers for diagnosis and prognosis for concussion	Dr John Mulvihill, UL	HRI Seed Funding	Study Coordination
Convince Study: Colchicine prevention of Vascular Inflammation in Non- Cardio Embolic Stroke - a randomised clinical trial of low-dose colchicine for secondary prevention after stroke	Dr Margaret O'Connor, UHL	HRB Stroke Clinical Trials Network	Data Entry, Advisory

Study	Principal Investigator/ Clinical Lead	Funder	Support
PIPPRA: Physiotherapist led intervention to Promote Physical Activity in Rheumatoid Arthritis	Prof. Norelee Kennedy, UL	HRB	Study Coordination, Research Nursing Support, Sample Preparation
AVF: In-Vivo invasive Blood Pressure Monitoring	Prof. Eamon Kavanagh, UHL	HSE	Research Nursing Support, including Consenting, Sample Preparation, Data Entry and Reporting
Pseudomonas: Differential Effects of Bacteria Colonising Venous Leg Ulcers on Pain and Healing Rates	Prof. Eamon Kavanagh, UHL	HSE	Research Nursing Support, including Consenting, Sample Preparation, Data Entry and Reporting
SOAED: Screening of Older Adults in the Emergency Department	Prof. Rose Galvin, UL	HRB	Clinical Research Governance
SOLAR: Frailty Screening and Multidisciplinary Assessment of Older Adults in the Emergency Department	Prof. Rose Galvin, UL	HRB	Clinical Research Governance
MEDRA: A Mediterranean diet in Rheumatoid Arthritis	Dr Audrey Tierney, UL	HRB	Clinical Research Governance
SPRINT-SARI: An international, multicenter, prospective, short period incidence observational study of patients in participating hospitals and intensive care units (ICUs) with severe acute respiratory infection (SARI)	Dr Catherine Motherway, UHL	ISARIC (International Severe Acute Respiratory and Emerging Infection Consortium)	Study Coordination, Data Collection and Data Entry
Solidarity: An International randomised trial of additional treatments for Covid-19 in hospitalised patients who are receiving the local standards of care	Dr Sarah O'Connell, UHL	HRB & Department of Health/WHO	Study Coordination

Appendix 1

HRI Full Members List (31st December 2020)

Name	Department/School
Dr Joanna Allardyce	School of Allied Health
Dr Ross Anderson	Dept. of Physical Education and Sport Sciences
Dr Sandra Atkinson	Dept. of Nursing and Midwifery
Dr Norma Bargary	Dept. of Mathematics and Statistics
Dr George Barreto	Dept. of Biological Sciences
Dr Pauline Boland	School of Allied Health
Dr Lydia Bracken	School of Law
Dr Carmel Bradshaw	Dept. of Nursing and Midwifery
Dr Ciara Breathnach	Dept. of History
Dr James Brown	Dept. of Biological Sciences
Prof. Paul Burke	University of Limerick Hospital Group Faculty of Education and Health Sciences
Dr Roisin Cahalan	School of Allied Health
Dr Mark Campbell	Dept. of Physical Education and Sport Sciences
Dr Eileen Carey	Dept. of Nursing and Midwifery
Dr James Carr	Dept. of Biological Sciences
Dr Brian Carson	Dept. of Physical Education and Sport Sciences
Dr Amanda Clifford	School of Allied Health
Prof. Calvin Coffey	School of Medicine
Prof. Alice Coffey	Dept. of Nursing and Midwifery
Dr Maurice Collins	School of Engineering and Bernal Institute
Dr Tom Comyns	Dept. of Physical Education and Sport Sciences
Dr Jakki Cooney	Dept. of Biological Sciences
Prof. Susan Coote	School of Allied Health
Dr Barry Coughlan	Dept. of Psychology
Dr Ann-Marie Creaven	Dept. of Psychology
Dr Alexandra Cremona	School of Allied Health
Dr Niamh Cummins	School of Allied Health
Dr Adam de Eyto	School of Design
Dr Tabea de Wille	Dept. of Computer Science and Information Systems
Prof. Alan Donnelly	Dept. of Physical Education and Sport Sciences
Dr Owen Doody	Dept. of Nursing and Midwifery
Dr Catriona Dowling	School of Medicine
Prof. Colum Dunne	School of Medicine
Dr Khalifa Elmusharaf	School of Medicine
Ms Anne Fahy	Dept. of Nursing & Midwifery

Name	Department/School
Prof. Dick Fitzgerald	Dept. of Biological Sciences
Prof. John Forbes	School of Medicine
Prof. Donal Fortune	Dept. of Psychology
Dr Romina Gaburro	Dept. of Mathematics and Statistics
Prof. Stephen Gallagher	Dept. of Psychology
Prof. Rose Galvin	School of Allied Health
Prof. Liam Glynn	School of Medicine
Dr Rosie Gowran	School of Allied Health
Dr Andreas Grabrucker	Dept. of Biological Sciences
Dr Margaret Graham	Dept. of Nursing and Midwifery
Dr Annmarie Grealish	Dept. of Nursing and Midwifery
Dr James Green	School of Allied Health
Dr Ronni Greenwood	Dept. of Psychology
Dr Anne Griffin	School of Allied Health
Prof. Ailish Hannigan	School of Medicine
Mr Bernard Hartigan	School of Design
Dr Sara Hayes	School of Allied Health
Dr Amanda Haynes	Dept. of Sociology
Ms Therese Hennessy	Dept. of Nursing and Midwifery
Dr Matthew P. Herring	Dept. of Physical Education and Sport Sciences
Dr Sharon Houghton	Dept. of Psychology
Dr Siobhan Howard	Dept. of Psychology
Dr Sarah Hyde	School of Medicine
Dr Eric Igou	Dept. of Psychology
Prof. Phil Jakeman	Dept. of Physical Education and Sport Sciences
Dr Philip Kearney	Dept. of Physical Education and Sport Sciences
Dr Dervla Kelly	School of Medicine
Prof. Norelee Kennedy	School of Allied Health
Dr Ian Kenny	Dept. of Physical Education and Sport Sciences
Prof. Patrick Kiely	School of Medicine
Dr Louise Kiernan	School of Design
Dr Liz Kingston	Dept. of Nursing and Midwifery
Dr Elaine Kinsella	Dept. of Psychology
Prof. Stephen Kinsella	Dept. of Economics
Dr Louise Iarkin	School of Allied Health
Dr Yianna Liatsos	School of English, Irish, and Communication
Dr John Lombard	School of Law
Dr Mark Lyons	Dept. of Physical Education and Sport Sciences
Dr Ciarán MacDonncha	Dept. of Physical Education and Sport Sciences

Name	Department/School
Prof. Anne MacFarlane	School of Medicine
Dr Tadhg MacIntyre	Dept. of Physical Education and Sport Sciences
Prof. Hussain Mahdi	Dept. of Electronic & Computer Engineering
Prof. Tiziana Margaria	Dept. of Computer Science and Information Systems
Dr Kathleen Markey	Dept. of Nursing and Midwifery
Dr Triona McCaffrey	Irish World Academy of Music and Dance
Dr Karen McCreesh	School of Allied Health
Dr Arlene McCurtin	School of Allied Health
Prof. Kieran McDermott	School of Medicine
Dr Kieran McGourty	Dept. of Chemical Sciences
Dr Muireann McMahon	School of Design
Dr Jennifer McMahon	School of Education
Dr Pauline Meskell	Dept. of Nursing and Midwifery
Prof. Lee Monaghan	Dept. of Sociology
Dr Lisa Moran	School of Medicine
Dr Kellie Morrissey	School of Design
Dr Ann-Marie Morrissey	School of Allied Health
Dr Hilary Moss	Irish World Academy of Music and Dance
Prof. Rachel Msetfi	Dept. of Psychology
Dr John Mulvihill	School of Engineering
Dr Carol-Anne Murphy	School of Allied Health
Dr Louise Murphy	Dept. of Nursing and Midwifery
Ms Jill Murphy	Dept. of Nursing and Midwifery
Dr Sylvia Murphy Tighe	Dept. of Nursing and Midwifery
Prof. Paul Murray	Health Research Institute
Dr Elaine Murtagh	Dept. of Physical Education and Sport Sciences
Dr Orfhlaith NiBhriain	Irish World Academy of Music and Dance
Dr Clifford Nolan	Dept. of Mathematics and Statistics
Ms Maria Noonan	Dept. of Nursing and Midwifery
Dr Catherine Norton	Dept. of Physical Education and Sport Sciences
Dr Brid O'Brien	Dept. of Nursing and Midwifery
Dr Eibhlis O'Connor	Dept. of Biological Sciences
Ms Anne O'Connor	School of Allied Health
Dr Claire O'Donnell	Dept. of Nursing and Midwifery
Prof. Clodagh O'Gorman	School of Medicine
Dr Sinead O'Keefe	Electronic and Computer Engineering
Dr Deirdre O'Loughlin	Kemmy Business School
Dr Andrew O'Regan	School of Medicine
Dr Bernadette O'Regan	Dept. of Chemical Sciences

Name	Department/School
Dr Pauline O'Reilly	Dept. of Nursing and Midwifery
Dr Cliona O'Riordan	School of Allied Health
Dr Deirdre O'Shea	Dept. of Work and Employment Studies
Dr Paraic O'Suilleabhain	Dept. of Psychology
Dr Kieran O'Sullivan	School of Allied Health
Prof. Leonard O'Sullivan	School of Design
Prof. Judi Pettigrew	School of Allied Health
Prof. Helen Phelan	Irish World Academy of Music and Dance
Dr Helen Purtil	Dept. of Mathematics and Statistics
Prof. Ita Richardson	Dept. of Computer Science and Information Systems
Dr Katie Robinson	School of Allied Health
Dr Elizabeth Ryan	Dept. of Biological Sciences
Dr Patrick Ryan	Dept. of Psychology
Dr Nuala Ryan	Dept. of Management and Marketing
Dr Ruth Ryan	Dept. of Nursing and Midwifery
Prof. Conor Ryan	Dept. of Computer Science and Information Systems
Dr Nancy Salmon	School of Allied Health
Dr Jon Salsberg	School of Medicine
Dr Jean Saunders	Dept. of Mathematics and Statistics
Dr Jennifer Schweppe	School of Law
Dr Ali Sheikhi	Health Research Institute / Dept. of Mathematics and Statistics
Dr Eimear Spain	School of Law
Prof. Austin Stack	School of Medicine
Dr Cristiano Storni	Dept. of Computer Science and Information Systems
Dr Audrey Tierney	School of Allied Health
Dr Elaine Toomey	School of Allied Health
Dr Clodagh Toomey	School of Allied Health
Dr Alexandros Tsoupras	Dept. of Biological Sciences
Dr Dympna Tuohy	Dept. of Nursing and Midwifery
Dr Pepijn Van de Ven	Dept. of Electronic & Computer Engineering
Prof. Cathal Walsh	MACSI and Dept. of Mathematics and Statistics
Prof. Michael Walsh	School of Engineering
Dr Giles Warrington	Dept. of Physical Education and Sport Sciences
Prof. Catherine woods	Dept. of Physical Education and Sport Sciences
Dr Aileen Wright	School of Allied Health
Dr Ioannis Zabetakis	Dept. of Biological Sciences

Appendix 2

HRI-Affiliated Papers in 2020 (Decile 1)

- Alsubhi, H., Meskell, P., Shea, D. O. and Doody, O. (2020) 'Missed nursing care and nurses' intention to leave: An integrative review', *Journal of Nursing Management*, 28(8), 1830-1840.
- Anderson, J. J., Gray, S. R., Welsh, P., Mackay, D. F., Celis-Morales, C. A., et al. (2020) 'The associations of sugar-sweetened, artificially sweetened and naturally sweet juices with all-cause mortality in 198,285 UK Biobank participants: a prospective cohort study', *Bmc Medicine*, 18(1).
- Bardon, L. A., Streicher, M., Corish, C. A., Clarke, M., Power, L. C., et al. (2020) 'Predictors of Incident Malnutrition in Older Irish Adults from the Irish Longitudinal Study on Ageing Cohort-A MaNuEL study', *Journals of Gerontology Series a-Biological Sciences and Medical Sciences*, 75(2), 249-256.
- Brady, C. J., Harrison, A. J., Flanagan, E. P., Haff, G. G. and Comyns, T. M. (2020) 'The Relationship Between Isometric Strength and Sprint Acceleration in Sprinters', *International Journal of Sports Physiology and Performance*, 15(1), 38-45.
- Cahalane, R. M., O'Brien, J. M., Kavanagh, E. G., Moloney, M. A., Leahy, F. C. and Walsh, M. T. (2020) 'Correlating Ex Vivo Carotid Calcification Measurements With Cerebrovascular Symptoms A Proof-of-Concept Study', *Stroke*, 51(9), E250-E253.
- Cattaneo, D., Coote, S., Rasova, K., Gervasoni, E., Groppo, E., Prokopiusova, T., Reznickova, J., Montesano, A. and Jonsdottir, J. (2020) 'Factors influencing balance improvement in multiple sclerosis rehabilitation: A pragmatic multicentric trial', *Annals of Physical and Rehabilitation Medicine*, 63(2), 93-98.
- Claes, J., Cornelissen, V., McDermott, C., Moyna, N., Pattyn, N., et al. (2020) 'Feasibility, Acceptability, and Clinical Effectiveness of a Technology-Enabled Cardiac Rehabilitation Platform (Physical Activity Toward Health-I): Randomized Controlled Trial', *Journal of Medical Internet Research*, 22(2).
- Connery, A., McCurtin, A. and Robinson, K. (2020) 'The lived experience of stuttering: a synthesis of qualitative studies with implications for rehabilitation', *Disability and Rehabilitation*, 42(16), 2232-2242.
- Del Rio, J. P., Molina, S., Hidalgo-Lanussa, O., Garcia-Segura, L. M. and Barreto, G. E. (2020) 'Tibolone as Hormonal Therapy and Neuroprotective Agent', *Trends in Endocrinology and Metabolism*, 31(10), 742-759.
- Dennis, M., Forbes, J., Graham, C., Hackett, M., Hankey, G. J., et al. (2020) 'Introduction', *Health Technology Assessment*, 24(22), 1-+.
- Dyer, A. H., Murphy, C., Lawlor, B., Kennelly, S. P., Segurado, R., et al. (2020) 'Cognitive Outcomes of Long-term Benzodiazepine and Related Drug (BDZR) Use in People Living With Mild to Moderate Alzheimer's Disease: Results From NILVAD', *Journal of the American Medical Directors Association*, 21(2), 194-200.
- Griffin, A., Kenny, I. C., Comyns, T. M. and Lyons, M. (2020) 'The Association Between the Acute:Chronic Workload Ratio and Injury and its Application in Team Sports: A Systematic Review', *Sports Medicine*, 50(3), 561-580.
- Hayes, S., Forbes, J. F., Celis-Morales, C., Anderson, J., Ferguson, L., et al. (2020) 'Association Between Walking Pace and Stroke Incidence Findings From the UK Biobank Prospective Cohort Study', *Stroke*, 51(5), 1388-1395.
- Houghton, C., Dowling, M., Meskell, P., Hunter, A., Gardner, H., et al. (2020) 'Factors that impact on recruitment to randomised trials in health care: a qualitative evidence synthesis', *Cochrane Database of Systematic Reviews*, (10).
- Houghton, C., Meskell, P., Delaney, H., Smalle, M., Glenton, C., Booth, A., Chan, X. H. S., Devane, D. and Biesty, L. M. (2020) 'Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis', *Cochrane Database of Systematic Reviews*, (4).
- Johnston, R., Cahalan, R., Bonnett, L., Maguire, M., Glasgow, P., Madigan, S., O'Sullivan, K. and Comyns, T. (2020) 'General health complaints and sleep associated with new injury within an endurance sporting population: A prospective study', *Journal of Science and Medicine in Sport*, 23(3), 252-257.
- Lakerveld, J., Woods, C., Hebestreit, A., Brenner, H., Flechtner-Mors, M., et al. (2020) 'Advancing the evidence base for public policies impacting on dietary behaviour, physical activity and sedentary behaviour in Europe: The Policy Evaluation Network promoting a multidisciplinary approach', *Food Policy*, 96.
- Lordan, R., Vidal, N. P., Pham, T. H., Tsoupras, A., Thomas, R. H. and Zabetakis, I. (2020) 'Yoghurt fermentation alters the composition and antiplatelet properties of milk polar lipids', *Food Chemistry*, 332.
- Lutz, A. K., Pfaender, S., Incearap, B., Ioannidis, V., Ottonelli, I., et al. (2020) 'Autism-associated SHANK3 mutations impair maturation of neuromuscular junctions and striated muscles', *Science Translational Medicine*, 12(547).
- Mangion, K., Adamson, P. D., Williams, M. C., Hunter, A., Pawade, T., et al. (2020) 'Sex associations and computed tomography coronary angiography-guided management in patients with stable chest pain', *European Heart Journal*, 41(13), 1337-1345.
- McNeill, E., Toth, A. J., Harrison, A. J. and Campbell, M. J. (2020) 'Cognitive to physical performance: a conceptual model for the role of motor simulation in performance', *International Review of Sport and Exercise Psychology*, 13(1), 205-230.
- Mohajeri, M., Bianconi, V., Avila-Rodriguez, M. F., Barreto, G. E., Jamialahmadi, T., Pirro, M. and Sahebkar, A. (2020) 'Curcumin: a phytochemical modulator of estrogens and androgens in tumors of the reproductive system', *Pharmacological Research*, 156.
- Murtagh, E. M., Murphy, M. H., Milton, K., Roberts, N. W., O'Gorman, C. S. M. and Foster, C. (2020) 'Interventions outside the workplace for reducing sedentary behaviour in adults under 60 years of age', *Cochrane Database of Systematic Reviews*, (7).
- Ng, K., Kokko, S., Tammelin, T., Kallio, J., Belton, S., O'Brien, W., Murphy, M., Powell, C. and Woods, C. (2020) 'Clusters of Adolescent Physical Activity Tracker Patterns and Their Associations With Physical Activity Behaviors in Finland and Ireland: Cross-Sectional Study', *Journal of Medical Internet Research*, 22(9).
- O'Donnell, C. and Andrews, T. (2020) 'Care accommodation in the acute care setting: Missed care or not?', *Journal of Nursing Management*, 28(8), 2128-2135.
- O'Donoghue, J., Moss, H., Clements-Cortes, A. and Freeley, C. (2020) 'Therapist and individual experiences and perceptions of music therapy for adolescents who stutter: A qualitative exploration', *Nordic Journal of Music Therapy*, 29(4), 353-370.

- O'Keeffe, M., O'Sullivan, P., Purtill, H., Bargary, N. and O'Sullivan, K. (2020) 'Cognitive functional therapy compared with a group-based exercise and education intervention for chronic low back pain: a multicentre randomised controlled trial (RCT)', *British Journal of Sports Medicine*, 54(13), 782-+.
- O'Reilly, P., Kennedy, C., Meskell, P., Coffey, A., Delaunois, I., et al. (2020) 'The psychological impact of Stevens-Johnson syndrome and toxic epidermal necrolysis on patients' lives: a Critically Appraised Topic', *British Journal of Dermatology*, 183(3), 452-461.
- Powell, C., Browne, L. D., Carson, B. P., Dowd, K. P., Perry, I. J., Kearney, P. M., Harrington, J. M. and Donnelly, A. E. (2020) 'Use of Compositional Data Analysis to Show Estimated Changes in Cardiometabolic Health by Reallocating Time to Light-Intensity Physical Activity in Older Adults', *Sports Medicine*, 50(1), 205-217.
- Riemann-Lorenz, K., Wienert, J., Streber, R., Motl, R. W., Coote, S. and Heesen, C. (2020) 'Long-term physical activity in people with multiple sclerosis: exploring expert views on facilitators and barriers', *Disability and Rehabilitation*, 42(21), 3059-3071.
- Saunders, D. H., Sanderson, M., Hayes, S., Johnson, L., Kramer, S., Carter, D. D., Jarvis, H., Brazzelli, M. and Mead, G. E. (2020) 'Physical fitness training for stroke patients', *Cochrane Database of Systematic Reviews*, (3).
- Sumner, R. C., Bennett, R., Creaven, A. M. and Gallagher, S. (2020) 'Unemployment, employment precarity, and inflammation', *Brain Behavior and Immunity*, 83, 303-308.
- Tiernan, C., Lyons, M., Comyns, T., Nevill, A. M. and Warrington, G. (2020) 'Investigation of the Relationship Between Salivary Cortisol, Training Load, and Subjective Markers of Recovery in Elite Rugby Union Players', *International Journal of Sports Physiology and Performance*, 15(1), 113-118.
- Tierney, A. C., Rumble, C. E., Billings, L. M. and George, E. S. (2020) 'Effect of Dietary and Supplemental Lycopene on Cardiovascular Risk Factors: A Systematic Review and Meta-Analysis', *Advances in Nutrition*, 11(6), 1453-1488.
- Xiao, X. X., McGourty, K. D. and Magner, E. (2020) 'Enzymatic Biofuel Cells for Self-Powered, Controlled Drug Release', *Journal of the American Chemical Society*, 142(26), 11602-11609.
- Zamboni, F., Ryan, E., Culebras, M. and Collins, M. N. (2020) 'Labile crosslinked hyaluronic acid via urethane formation using bis(beta-isocyanatoethyl) disulphide with tuneable physicochemical and immunomodulatory properties', *Carbohydrate Polymers*, 245.

Appendix 3

Research Grants Awarded Academic Year 2019-2020 (>50K IN VALUE)

Funding Source	Budget €	Description	Project Leader
Enterprise Ireland	1,203,799	Optimised Commercial Scale Cultivation of Protein-rich biomass from <i>Palmaria Palmata</i>	Dick Fitzgerald
King Khalid University	188,310	Interprofessional Education Research Project - Saudi Project	Khalifa Elmusharaf
Health Research Board	373,350	Development and evaluation of an adaptive mobile health Physical activity intervention post-stroke	Sara Hayes
External Foundation	57,564	Connacht Rugby Player Retention and Volunteer Recruitment Research Programme	Philip Kearney
European Union	913,380	Optical Fibre Dose Imaging for Adaptive Brachytherapy	Sinead O'Keeffe
Enterprise Ireland	221,605	A stable isotope approach to determine bio-efficacy of plant protein isolates to stimulate human skeletal muscle protein synthesis	Phil Jakeman
Department of Agriculture, Food and the Marine	181,624	Blue whiting protein hydrolysates for management of sarcopenia	Dick Fitzgerald
European Union	352,225	IDEA-FAST	Norelee Kennedy
Health Research Board	369,210	Transitions of Care in Advanced Chronic Kidney Disease	Austin Stack
European Union	79,817	Sharerepair Interreg	Muireann McMahon
Genio Trust	134,894	Evaluation of Implementation of the National Housing First Programme in Ireland	Ronni Greenwood
Irish Research Council	99,804	Irish Travellers Access to Justice	Amanda Haynes
Health Research Board	249,223	Disparities in Health Outcomes of Chronic Kidney Disease between Men and Women in the Irish Health System	Austin Stack
Marine Institute	124,628	SuReMetS: from Sustainable Resources to novel marine nutraceuticals for the management of Metabolic Syndrome	Dick Fitzgerald
Irish Research Council	96,000	Enterprise Partnership Seamus Hickey	Kieran McGourty
Irish Research Council	96,000	Enterprise Partnership Cliona McCarthy	John Mulvihill
UL Foundation	199,949	Dr Jim McCarron Fellowship	Patrick Kiely

Funding Source	Budget €	Description	Project Leader
European Union	73,560	Smart 4.0 Confirm Co-Fund EU - Tiziana Margaria	Tiziana Margaria
Environmental Protection Agency	71,875	INCASE	Stephen Kinsella
UL Foundation	350,000	Midwest Institute for Infectious Diseases	Norelee Kennedy
Health Research Board	175,013	Health Staff Psychological Response to COVID 19	Donal Fortune
Health Research Board	199,598	A Rapid Resource Repository for Health Professionals (RRR-HP): An online and social media individualized support intervention for return to practice, reassigned and new to practice, Nursing and Allied Health Professionals	Alice Coffey
European Union	1,647,263	GO Green Routes	Tadhg MacIntyre Alan Donnelly
Irish Research Council	136,918	Learning in Motion: embedding gender-responsive, play-based pedagogies in teacher education in Palestine	Elaine Murtagh
European Union	51,950	Be Like an Athlete (BLA)	Tadhg MacIntyre
Science Foundation Ireland	237,215	RAPID	Leonard O'Sullivan
Irish Research Council	96,000	Enterprise Partnership Conor Raleigh	Brian Carson
Science Foundation Ireland	606,040	FAST	Norma Bargary
Enterprise Ireland	203,218	The application of enzymatic hydrolysis to enhance the functionality (heat stability) of whey protein concentrate (WPC35)	Richard Fitzgerald
Health Research Board	726,899	IMPLementation of osteoArthritis Clinical guidelines Together (IMPACT)	Clodagh Toomey
National Childrens Research Centre	62,428	National Childrens Research Centre - Clinical Research Coordinator Funding	Colum Dunne
Irish Research Council	91,970	GOIPD Rachel Sheehan	Ian Kenny
European Union	196,591	VirGO	Paul Murray
Irish Research Council	91,970	GOIPD Olwyn Mahon	Patrick Kiely



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