



MACQUARIE
University
SYDNEY · AUSTRALIA

Australian Institute of Health Innovation

ANNUAL REPORT

2021

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Bela Laginha	Holger Pfaff	Mai-Tram Nguyen	Sheree Crick	Brett Gardiner	Jackie Mullins
Blake Entwisle	Hossai Gul	Maria Dahm	Shlomo Berkovsky	Brette Blakely	Janet Long
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Chloe Szilas	Joelle Metri	Nasir Wabe	Toby Hodgson	Chrissy Clay	Joy Dai-Keller
Chloe Zurynski	Johanna Westbrook	Natalie Roberts	Tony Badrick	Chrissy Imai	Joyce Ng
Chrissy Clay	Joy Dai-Keller	Nazim Uddin Sheikh	Tor Ingebrigtsen	Claire Maddox	Juan Quiroz Aguilera
Chrissy Imai	Joyce Ng	Neroli Sunderland	Tracey Bucknall	Cliff Hughes	Judith Thomas
Claire Maddox	Juan Quiroz Aguilera	Neville Board	Trent Yeend	Colum Ruane	Julie Li
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Colum Ruane	Julie Li	Noura Saba	Trish Greenhalgh OBE	Crisostomo Mercado	Karen Owen
Colum Ruane	Karen Hutchinson	Oliver Groene	Tze Ping Loh	Dana Rezazadegan	Karen Owen
Crisostomo Mercado	Karen Owen	Patrick McNeil	Valentina Lichtner	David Lyell	Karina Aase
Dana Rezazadegan	Karen Owen	Patrick Bolton	Virginia Mumford	David Roffe	Karla Seaman
David Lyell	Karina Aase	Paul Lane	Vu Do	David Wilkinson	Kasun Rathnayake
David Roffe	Karla Seaman	Paul Levy	Wendy James	Deborah Debono	Kate Churruca
David Wilkinson	Kasun Rathnayake	Paul Monagle	Wu Yi Zheng	Denise Tsiros	Kate Gibbons
Deborah Debono	Kate Churruca	Peter Gates	Ying Wang	Diana Fajardo Pulido	Kathleen Rolfe
Denise Tsiros	Kate Gibbons	Peter Hibbert	Yukihiro Matsuyama	Didi Surian	Kathleen Yin
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Thank

These are the names of all the people who were part of AIHI in 2021. Every contribution is valued.

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Kristiana Ludlow	Reidar Lystad	Amith Shetty	Gabriela Gonzalez	Lauren Ehrenfeld	Robyn Clay-Williams
Laura Dodds	Renuka Chittajallu	Amy Tran	Gaston Arnolda	Laya Jose	Roger Wilson
Laura Tuckwell	Robert Lindeman	Andrea Horvath	Genevieve Dammary	Les White	Roneel Sharan
Lauren Ehrenfeld	Robyn Clay-Williams	Andrea Smith	George Rubin	Lesley Hughes	Rosie Bonnin
Laya Jose	Roger Wilson	Andrew Carson-Stevens	Gilbert Knaggs	Leslie White	Rowena Stamford
Les White	Roneel Sharan	Andrew Georgiou	Gorkem Sezgin	Lieke van Baar	Ruby Ash
Lesley Hughes	Rosie Bonnin	Andrew Lau	Grace Norton	Liliana Laranjo da Silva	Ruqaiya Nullwala
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Liliana Laranjo da Silva	Ruqaiya Nullwala	Angus Corbett	Guy Tsafnat	Louise Lor	Ryan McMullan
Ling Li	Russell Mannion	Ann Carrigan	Hania Rahimi Ardabili	Louise Schaper	Saba Akbar
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Maha Pervaz Iqbal	Scott Walter	Blanca Gallego Luxan	Isabelle Meulenbroeks	Marika Franklin	Sidong Liu
Mai-Tram Nguyen	Sheree Crick	Brett Gardiner	Jackie Mullins	Martin Basedow	Siri Wiig
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Mitchell Sarkies	Timothy Devinney	Chrissy Imai	Joy Dai-Keller	Nazim Uddin Sheikh	Tor Ingebrigtsen
Mohamed Khalifa	Toby Hodgson	Claire Maddox	Joyce Ng	Neroli Sunderland	Tracey Bucknall
Nasir Wabe	Tony Badrick	Cliff Hughes	Juan Quiroz Aguilera	Neville Board	Trent Yeend
Natalie Roberts	Tor Ingebrigtsen	Colum Ruane	Judith Thomas	Nicole Halim	Trevor Cobain
Nazim Uddin Sheikh	Tracey Bucknall	Colum Ruane	Julie Li	Noura Saba	Trish Greenhalgh OBE
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Patrick McNeil	Virginia Mumford	Deborah Debono	Kasun Rathnayake	Paul Monagle	Wu Yi Zheng
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Paul Lane	Wendy James	Diana Fajardo Pulido	Kate Gibbons	Peter Hibbert	Yukihiro Matsuyama
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Prashanthi Boravelly	Zakir Hossain	Emily Lightowler	Kelly Nguyen	Rachel Urwin	Zubair Shah
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Rabia Bashir	Zubair Shah	Erik Hollnagel	Kim Lind	Rebecca Bilton	Adam Jaffe
Rachel Urwin	Adam Dunn	Erin Fitzpatrick	Kiran Ijaz	Rebecca Lake	Ai Choo Kang
Rae-Anne Hardie	Adam McLeod	Erwin Loh	Klay Lamprell	Rebecca Mitchell	Alain Koyama
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Rebecca Lake	Alain Koyama		Laura Dodds	Renuka Chittajallu	Amith Shetty
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(you) us



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Founding Director's report



Our mission at the Australian Institute of Health Innovation (AIHI) is to conduct world-class research to catalyse performance improvement in healthcare services and systems in Australia and internationally. Those of us who work in, or have expertise of healthcare, knew that sooner or later, a major pandemic would materialise. Although we don't know how the first pandemics evolved, viruses in the family that led to COVID-19 have been around for millions of years and they have mutated throughout human history.

Yet no-one predicted this particular pandemic, and few realised in the very early days that the SARS-CoV-2 virus would pose such an existential threat. We are still being surprised by the pandemic, its course, progress, and the consequences on health, healthcare, and society.

Now, at the end of year two, science has learned much about the mechanisms of the disease and designed remarkable vaccines, and the world has accommodated to the pandemic in many ways.

At AIHI, we, too, pivoted.

We conducted multiple studies on various aspects of the pandemic, including examining its effects in 97 countries, applying a machine learning approach for automated severity assessment of COVID-19 based on clinical and imaging data, and conducting a national survey on COVID-19 second-wave lockdowns on older adults' mental wellbeing, health-seeking behaviours, and social outcomes.

We continued the many other studies we had in train, despite facing lockdowns and restrictions under COVID-19, and even started new projects. Indeed, across the Institute we have done a fine job to weather this storm and remain resilient, productive, and engaged with our partners, stakeholders, and projects. This is a tribute to the dedication and expertise of all in our enterprise.

Notwithstanding this, across the world, throughout Australia, and within the Institute, we have been challenged, and sometimes even



Australia's first fully integrated and university led health precinct



Ranked in the top 1 per cent of universities in the world

(QS WORLD UNIVERSITY RANKINGS, 2021)

threatened, by the circumstances in which we find ourselves. We are using the lessons on resilience that we have provided to the healthcare system, within the virtual walls of our own Institute. We are seeking to provide an environment for our staff and students that recognises mental health needs and supports our ability to continue doing the great research we do, year-in-year-out, when no-one can see the pandemic end game and how we might get there.

In navigating all these complexities and challenges, our numbers this year speak volumes: our 223 staff, students, and visiting academic have published 268 peer-reviewed journal articles, chapters, books, and reports, we have made numerous local and international presentations, and supervised and mentored 29 higher degree research students. Remarkably, we have not just held our own, but find ourselves growing this year. We are presiding over 125 projects within the Institute, with 24 additional projects to which we contribute run by other universities and institutions.

And there's more. Despite the headwinds, trials, and travails, in this single year we have received commendations and accolades and been conferred new grants, awards, and prizes of distinction. In particular, Professor Enrico Coiera was recognised by *The Australian Research 2021 Magazine* as the national field leader for medical informatics and I was honoured to receive the Sidney Sax Medal for health leadership by the Australian Healthcare and Hospitals Association. The National Health and Medical Research Council (NHMRC) Partnership Centre for Health System Sustainability (PCHSS) received the 'Excellence in Research Five Future-Shaping Research Priorities: Healthy People' Award in the 2021 Macquarie University Academic Staff Awards.

Looking ahead to 2022, we will be welcoming the Macquarie University Centre for the Health Economy, led by Professor Henry Cutler, to AIHI, as the fourth university research centre, expanding our remit into

health economy policy analysis and digital health technology evaluations.

2021 has highlighted not only our resilience, flexibility, and adaptability. We have shown our willingness to go above and beyond to contribute and conduct impactful research, to help make healthcare safer, more sustainable, and stronger. It's hard to think of a more noble cause for researchers than to support the Institute's mission and help carry it out.



Professor Jeffrey Braithwaite
FOUNDING DIRECTOR

Despite the headwinds, trials and travails, in this single year we have received commendations and accolades and been conferred new grants, awards and prizes of distinction

Who we are

What does it mean that we are the Australian Institute of Health Innovation? Of the four operative words in that title, we say *Australian*, not because our research is solely done in and about Australia, but that is where most of us are located – head office, if you will. But in reality, our work is extremely international. Many of us have international appointments concurrent with our substantive positions at Macquarie, and others of us are based in Europe, North America, Southeast Asia and the Oceania region, and have a visiting appointment at the Institute. Our work sees us doing studies in 152 countries at last count. Based in Australia by dint of geography but international in nature, you could say.

The second word in the title also needs a bit of explication. An *Institute* is university-speak for a large research grouping, typically in a building somewhere on a sprawling academic campus. We are certainly that, and we have over 100 people on the sixth floor of 75 Talavera Road, North Ryde, nestled within the intellectual hub that is the medical precinct of the Macquarie University campus. Yet again, that is a geographically anchored, and perhaps an anachronistic word. An Institute like ours is a distributed enterprise, with ideas, theories and the very best thinking, writing and studying taking place everywhere these activities can be done: on a bus, train or plane, in a café, at home, or in another country in a different time-zone.

If taken too literally, the third word can lead to an incomplete understanding of us, too. We certainly do research on a very wide range of *Health* topics. But we study many aspects of health and healthcare – not just acute care, but also aged care, general practice, community care, health policy, and the leadership and management of the system too, to mention only a few.

Which leads us to the final word in our title. We are not just known for our *Innovation* in the range of research projects we design, have funded, and execute. Cutting-edge ideas, novel studies, leading ways to do research, the latest theories, ahead-of-the-curve concepts – we employ and deploy all of these for the benefit of the system, the providers of care, and patients.

So: who we are is succinctly but only partially described by our title. We are much more than what it says on the tin, as the following pages of this annual report will articulate in a whole lot more detail.



AIH comprises three independent, complementary, and highly collaborative research centres, each of which takes a systems perspective to solve healthcare problems, utilising highly innovative and wide-ranging research methods.

- Centre for Health Informatics [↗](#)
- Centre for Health Systems and Safety Research [↗](#)
- Centre for Healthcare Resilience and Implementation Science [↗](#)



Our leadership in translational health services research is further evidenced by the innovative work of our three National Health and Medical Research Council (NHMRC) funded centres:

- NHMRC Partnership Centre for Health System Sustainability [↗](#)
- NHMRC Centre of Research Excellence in Digital Health [↗](#)
- NHMRC Centre of Research Excellence in Implementation Science in Oncology [↗](#)



AIHI at a glance

HEAL. LEARN. DISCOVER.

\$45m

Enterprise value of projects under AIHI management

124

Number of research projects under AIHI management

\$58.8m

Enterprise value of grants administered elsewhere involving AIHI

24

Number of projects administered elsewhere involving AIHI

\$7m

Enterprise value of grants commenced 2021

\$31m

Category 1 Funding for grants under management 2021

223

Researchers, visiting appointees and professional staff

29

HDR students

268

Peer-reviewed outputs

WE PROVIDE THE RESEARCH EVIDENCE TO IMPROVE HEALTHCARE FOR COMMUNITIES AROUND THE WORLD



Understanding the relationship between system complexity and system performance



Evaluating the impact of interventions on health, workplace, and social outcomes



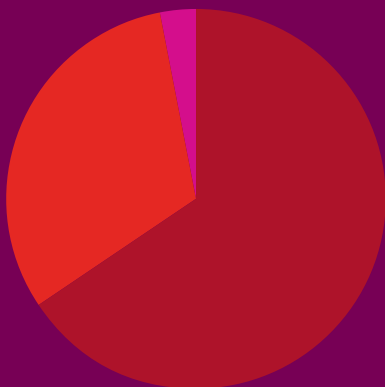
Understanding behaviour as a basis for practice improvement



Use of artificial intelligence as a technique to support evidence-based decision-making



Designing models of care and ways of working which provide improved safety and quality



GRANTS UNDER MANAGEMENT 2021 BY FUNDING CATEGORY



CATEGORY 1
Grants awarded from the Australian Competitive Grants Register



OTHER
Industry and Other R&D Income



CATEGORY 2 AND 3
Other Public Sector R&D Income

Our Board



MACQUARIE UNIVERSITY
Professor
Patrick McNeil
Chair



MACQUARIE UNIVERSITY
Professor
Jeffrey Braithwaite



MACQUARIE UNIVERSITY
Professor
Johanna Westbrook



MACQUARIE UNIVERSITY
Professor
Enrico Coiera



MACQUARIE UNIVERSITY
Professor
Cliff Hughes AO



MACQUARIE UNIVERSITY
Professor
Lesley Hughes



NSW HEALTH SYSTEM
Professor
Adam Jaffé



NSW HEALTH SYSTEM
Professor
George Rubin



NSW HEALTH SYSTEM
Professor
Patrick Bolton



NSW HEALTH SYSTEM
Professor
Sally Redman AO



NSW HEALTH SYSTEM
Ms Carrie Marr



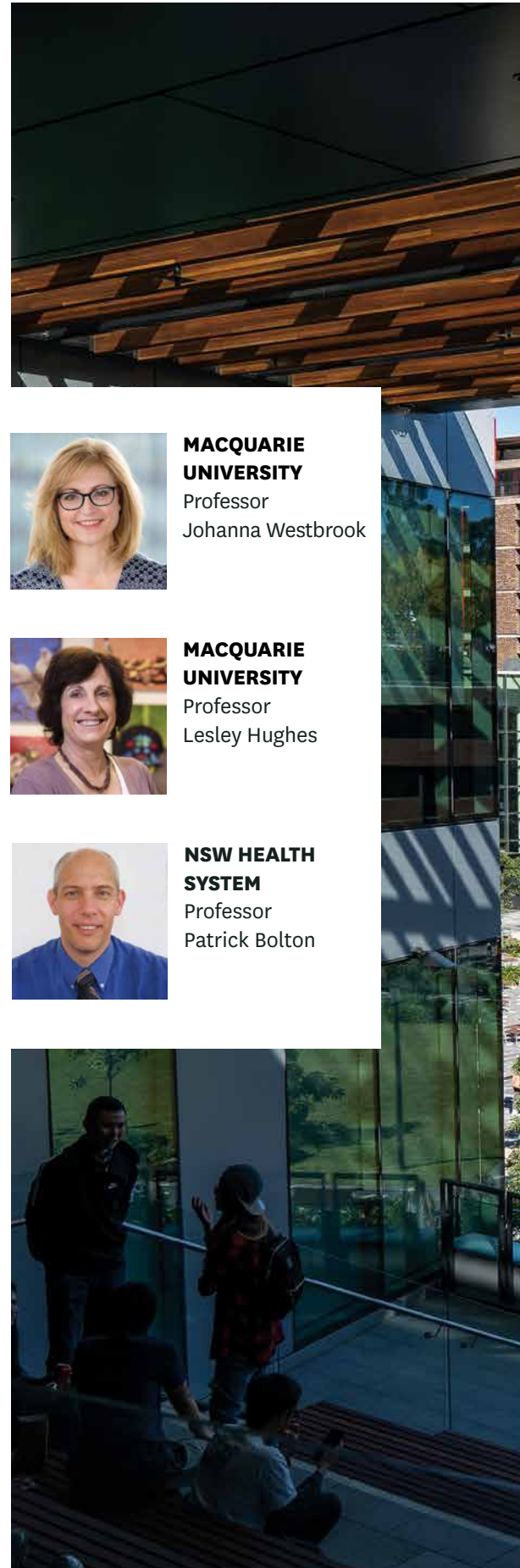
INDEPENDENT MEMBER
Professor
Les White AM



INDEPENDENT MEMBER
Dr Karen Owen

BOARD SECRETARIAT

Ms Chrissy Clay
Ms Sue Christian-Hayes





Our partners

The Australian Institute of Health Innovation is proud to partner with a broad range of government, industry, health services, and research institutions. We also highly value our engagement with health consumers through advocacy groups and clinical trials. A full list of our national and international partners can be found on our website at aihi.mq.edu.au with a selection listed here.



Hospitals



Academia



Clinicians



Industry



Health consumers



Peak bodies



International bodies



Government

- ACT Health
- Aged Care Quality and Safety Commission
- Agency for Clinical Innovation NSW
- Anglicare
- Annalise.ai
- Australasian Institute of Digital Health
- Australian Commission on Safety and Quality in Health Care (ACSQHC)
- Australian Genomics Health Alliance
- Australian Government Department of Health
- Australian Government Department of Social Services
- Australian Research Council
- BaptistCare
- Black Dog Institute
- Bond University
- Brain and Mind Centre
- Bupa Health Foundation Australia
- Bureau of Health Information
- Cancer Australia
- Cancer Institute NSW
- CanTeen
- Children's Cancer Institute Australia
- Clinical Excellence Commission NSW
- Cochlear Ltd
- Consumers Health Forum of Australia
- CSIRO Australian e-Health Research Centre
- CSIRO Data61
- Digital Health Cooperative Research Centre (DHCRC)
- eHealth NSW
- Eriksholm Research Centre (Denmark)
- Evidentli
- Harrison.ai
- Harvard Medical School (USA)
- Health Infrastructure NSW
- Healthdirect Australia
- Independent Hospital Pricing Authority
- International Medical Informatics Association
- International Society for Quality in Health Care
- Juvenile Diabetes Research Foundation
- Karolinska Institutet (Sweden)
- Kolling Institute of Medical Research
- KPMG Australia
- Local Health Networks – various
- Macquarie University Business School
- Macquarie University Hearing Collaborative Research Centre
- Macquarie University Hospital and MQ Health
- Macquarie University Speech and Hearing Clinic
- Medibank Private Ltd
- Medical Council of NSW
- Melanoma Institute Australia



- Mito Foundation Australia
- Murdoch Children's Research Institute
- National Children's Digital Health Collaborative
- National Disability Insurance Agency and National Disability Insurance Scheme
- National Health and Medical Research Council
- National Institute for Health Research (UK)
- National Library of Medicine (USA)
- Neu-Ulm University of Applied Sciences (Germany)
- New South Wales Department of Communities and Justice
- New South Wales Department of Health
- New South Wales Health Pathology
- New South Wales Institute of Trauma and Injury Management
- Northern Territory Department of Health
- Optus Macquarie University Cyber Security Hub
- Organisation for Economic Co-operation and Development
- Outcome Health
- Primary Health Networks (PHN) – various
- Queensland Department of Health
- Rare Voices Australia
- Research Australia
- Royal Australian College of General Practitioners
- Royal College of Pathologists of Australasia
- Royal Commission into Aged Care Quality and Safety
- Sax Institute
- South Australia Department of Health
- St Vincent's Health Australia
- Sydney Children's Hospital Network
- Tasmanian Department of Health
- Telethon Kids Institute
- University College London (UK)
- University of Cambridge (UK)
- University of Melbourne
- University of New South Wales
- University of Notre Dame Australia
- University of Oxford (UK)
- University of Queensland
- University of South Australia
- University of Sydney
- University of Western Australia
- University of Wollongong
- Victorian Department of Health
- Western Australian Department of Health
- Westmead Institute for Medical Research
- World Health Organization

Our Directors

PROFESSOR JEFFREY BRAITHWAITE

**Founding Director, Australian Institute of Health Innovation
Director, Centre for Healthcare Resilience and Implementation Science
Professor of Health Systems Research, Macquarie University**

Professor Jeffrey Braithwaite is a leading health services and systems researcher, with a highly regarded global profile. He has considerable expertise in researching the culture and structure of acute settings, leadership, management and change in healthcare, quality and safety in healthcare, international health reform, and the restructuring of health services. He has published extensively, with over 715 refereed contributions and over 24,187 citations.

Innovation and collaboration are at the very heart of our approach.

applying complexity science to healthcare improvement and reform. The International Society for Quality in Health Care (ISQua) has indicated that Professor Braithwaite contributes the most valuable international research in the field. Numerous national governments and health systems, the World Health Organization (WHO) and the Organisation for Economic Co-Operation and Development (OECD) have made extensive use of his work on quality indicators and Safety-II.

A major breakthrough is represented in papers providing advances in healthcare structural change, and the need to deploy more sophisticated change strategies such as via complexity science, culture change or organisational change through collaborative networks.

Professor Braithwaite is the recipient of 57 awards, including the prestigious Australian Healthcare and Hospitals Association 2021 Sidney Sax Medal for leadership in improving the delivery, quality, and safety of healthcare systems. He was also awarded the Health Services Research Award by Research Australia in 2015 and multiple Editor's Choice awards for papers published in the *International Journal for Quality in Health Care*. In 2020, Professor Braithwaite was inducted as President of ISQua.

Professor Braithwaite is the recipient of career research funding of more than \$179 million over 116 grants.

His cutting-edge research on culture, reform, and resilience has produced an extensive body of work that includes 15 highly regarded books. Professor Braithwaite has also led research laying new underpinnings of the discipline, particularly

PROFESSOR JOHANNA WESTBROOK

Director, Centre for Health Systems and Safety Research

NHMRC Elizabeth Blackburn Investigator Leadership Fellow

Co-Director, Safety, Quality, Informatics and Leadership Program, Harvard Medical School, Harvard University

Professor Johanna Westbrook is internationally recognised for her research evaluating the effects of information and communication technology (ICT) in healthcare. Professor Westbrook has led research in the development and application of approaches to evaluate ICT, including new tools and methods which have been adopted internationally. She has extensive expertise in the study of medication safety.

Professor Westbrook has contributed to theoretical models regarding the design of complex multi-method ICT evaluations and conducted large trials of their effects. Integral to assessing the effectiveness of ICT to innovate work, and improve safety and quality of care, is gaining a deep understanding of clinical work and communication processes. Her research has included the development of the Work Observation Method by Activity Timing (WOMBAT) software to support the conduct of observational workflow studies, which has been used by 54 research teams across 15 countries.



Professors Braithwaite, Westbrook and Coiera

Professor Westbrook's research has led to significant advances in our understanding of how clinical information systems deliver (or fail to deliver) expected benefits and supported translation of this evidence into policy, practice, and information technology (IT) system changes. Research findings led by Professor Westbrook have been extensively referred to by the Royal Commission into Aged Care Quality and Safety.

Professor Westbrook has over 500 publications and has been awarded more than \$70 million in research grants.

In 2020, Professor Westbrook was awarded the NHMRC Elizabeth Blackburn Investigator Grant Award for Leadership in Health Services Research; and appointed as a Co-Director of the Safety, Quality, Informatics and Leadership Program for Harvard Medical School.

Between 2016 and 2019, she was appointed by the Federal Minister for Health to the Board of the Australian Digital Health Agency, and in 2014 was named Australian ICT Professional of the Year by the Australian Information Industry Association.

In recognition of her research contributions, she has been elected as a Fellow of the International Academy of Health Sciences Informatics, the American College of Medical Informatics (one of only four Australians who have received this honour and the only woman), the Australasian Institute for Digital Health, and the Australian Academy of Technology and Engineering.

PROFESSOR ENRICO COIERA

Director, Centre for Health Informatics

Director, NHMRC Centre of Research Excellence in Digital Health

Founder, Australian Alliance for Artificial Intelligence in Healthcare

Professor in Medical Informatics, Macquarie University

Trained in medicine and with a computer science PhD in Artificial Intelligence (AI), Professor Enrico Coiera is Foundation Professor in Medical Informatics at Macquarie University and Director of the Centre for Health Informatics (CHI), a group he co-founded in 2000. He is also Director of the NHMRC Centre of Research Excellence in Digital Health (CREiDH) and founder of the Australian Alliance for Artificial Intelligence in Healthcare (AAiH).

Professor Coiera spent 10 years at the prestigious Hewlett-Packard Research Laboratories in Bristol UK where he led numerous health technology projects.



He has overseen the development and trial of multiple eHealth interventions, including the Healthy.me consumer system as well as clinical decision support systems. Clinical data mapping technologies underpin a health start-up spun out of CHI called Evidentli which has national and international customers. His textbook, *Guide to Health Informatics*, is in its 3rd edition, is widely used internationally, and is translated into several languages.

In 2021, Professor Coiera contributed to the International Global Partnership on Artificial Intelligence (GPAI), an AI and Pandemic Response AI Working Group. In light of the global health emergency, the group supported the responsible development and use of AI-enabled solutions to fight COVID-19 and other future pandemics.

Professor Coiera contributed to the International Medical Informatics Association (IMIA) first 50 Year History Book, 'Transformation of Healthcare'; and has won several prestigious awards, including the 2015 IMIA François Grémy Award for Excellence and the 2011 UNSW Inventor of the year Information and Communication Technology (ICT) for a literature-based computational discovery system.

Professor Coiera is a Fellow of the Australian Academy of Health and Medical Sciences, was elected Foundation Fellow and first President of the Australian College of Health Informatics, is a foundation member of the International Academy of Health Sciences Informatics, and an International Fellow of the American College of Medical Informatics.

Professor Coiera has also held key appointments on boards, councils, and editorial positions on international journals. He has been a chief investigator on competitive grants worth over \$48 million, has over 400 publications and over 20,000 citations and an H-Index of 72 (Google Scholar). Of these publications, 45 have more than 100 citations, 10 have more than 300 citations, and one has more than 2250 citations.

**Our research
addresses
the priority
areas for
health system
improvement.**

Key new grants for 2021

NHMRC PARTNERSHIP PROJECTS

\$1.4m

plus \$375,000 partner funds

A National Aged Care Medication Roundtable - Translating aged care data into action to improve quality of care through collaboration and co-design.

Professor Johanna Westbrook

Partners:
BaptistCare
Scalabrini
Anglicare
ACSQHC

\$1m

plus \$350,000 partner funds

Establishing a digital health foundation for outcomes-based diagnostic excellence, safety, and value.

Professor Andrew Georgiou

Partners:
Abbott Diagnostics
South Eastern Sydney LHD
NSW Health Pathology
ACSQHC

NHMRC INVESTIGATOR GRANTS

\$1.5m

Bringing artificial intelligence into the real world of healthcare – the implementation challenge.

Professor Enrico Coiera

\$650,740

Building a culture of safety in Australian residential aged care facilities.

Dr Kate Churruca

\$617,583

Implementing and scaling an evidence-informed model for hip fracture management: harnessing implementation science for complex adaptive healthcare systems.

Dr Mitchell Sarkies

IMPACT STORIES

Making a difference to communities

Innovative informatics is improving aged care safety



Professor Johanna Westbrook

In an Australian first, aged care providers, researchers, industry experts, policy makers, residents, and consumers are coming together to form a National Aged Care Medication Roundtable led by Professor Westbrook and funded by a NHMRC Partnership Project Grant.

Poor medication management in aged care was the most reported issue to the Royal Commission into Aged Care Quality and Safety, representing one in three complaints. This study seeks to leverage a learning health systems model to tackle this intractable issue.

The roundtable will meet regularly to benchmark medication use, learn from each other, create strategies to enhance quality use of medication, and review changes in practice as they occur through regularly updated data. To achieve this, innovated informatics solutions with routinely collected aged care provider data are being utilised. Building upon previous work conducted at AIHI, this study will analyse aged care provider data to enable meaningful comparisons across the 47 facilities and three providers involved in medication management (e.g., polypharmacy, length of treatments, adherence to guidelines). It will monitor changes from co-designed interventions over the five-year study period to determine their effectiveness.

Seaman KL, Jorgensen ML, Raban MZ, Lind KE, Bell JS, Westbrook JI.

Transforming routinely collected residential aged care provider data into timely information: Current and future directions. *Australasian Journal on Ageing*. 2021;40(3):e262-e8. [↗](#)

Australia's first National Aged Care Medication Roundtable will improve the quality use of medication in aged care

IMPACT STORIES
Making a difference to communities

National survey delivers roadmap for AI in healthcare

The AAAiH consulted widely in 2021 across the health system, industry, consumers, and government to understand national priorities and craft a Roadmap for AI in Healthcare for Australia.

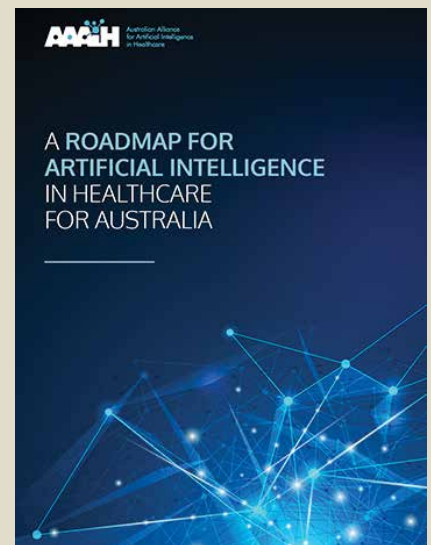
The Roadmap contains 24 recommendations across eight priority areas, covering critical issues such as safety, quality and ethics, industry development, and consumer needs.

Lead author, Professor Coiera reported that the highest community priority identified was for healthcare AI to be safe for patients and developed and used ethically. AI privacy and data security was a major concern. Respondents also identified the need for genuine whole-of-nation leadership in the healthcare AI space as well as robust governance of the sector. Gaps in our workforce capability to build and use healthcare AI were clearly identified, as was the need

for consumers to be fully engaged in shaping the healthcare AI agenda. Respondents also rated the gaps in our capability to adopt AI into practice and the need to enhance local industry capability as issues needing clear attention.

Together these recommendations set us a target for a fully funded national plan by 2025 that will create an AI-enabled Australian healthcare system capable of delivering personalised healthcare, safely and ethically. The plan also envisages a vibrant AI industry sector that creates jobs and exports to the world, working side by side with an AI-aware workforce and AI-savvy consumers. The Roadmap has been distributed widely to stakeholders across the healthcare system.

Coiera E, Waldie J. A Roadmap for Artificial Intelligence in Healthcare for Australia [Internet], 1 December 21, Sydney: Australian Alliance for Artificial Intelligence in Healthcare, ISBN: 978-1-74138-486-4. [↗](#)



A collaboration of almost 100 member organisations is supporting the safe use of AI in healthcare

National AI priorities in healthcare (AAAiH Survey August, 2021)	Rank	Percentage (%)
Safety, quality and ethics	1	17.8
Privacy and security	2	15.3
Governance and leadership	3	13.7
Research and development	4	11.7
Workforce	5	11.6
Consumers	6	11.2
Adoption	7	10.5
Industry	8	8.2

IMPACT STORIES

Making a difference to communities

Clinical indicators will improve aged care



Associate Professor Peter Hibbert

With Australia's population ageing rapidly, the number of people over 85 is projected to double in the next 25 years, placing increasing pressure on the aged care system. In internationally recognised research, CareTrack Aged, led by Professor Braithwaite and Associate Professor Peter Hibbert, is providing the evidence to support sustainable quality care in residential aged care facilities (RACFs).

The research has already attracted widespread interest with the development of the world's first comprehensive set of process indicators in aged care, with 236 in total. The indicators will be used by CareTrack Aged to assess whether care provided in RACFs is consistent with the evidence for best clinical practice.

The CareTrack Aged indicators have been presented to senior executives at the Australian Government Department of Health and the Aged Care Quality and Safety Commission. Also, Associate Professor Hibbert was invited to participate in a Think Tank on Quality in the Aged Care Sector, seeking to drive quality in response to findings from the Royal Commission into Aged Care Quality and Safety.

Hibbert PD, Clay-Williams R, Westbrook J, Reed RL, Georgiou A, Wiles LK, Molloy CJ, Braithwaite J. Reducing preventable harm to residents in aged care: a systems approach. *Australasian Journal on Ageing*. 2021 Mar; 40(1):72-76. [↗](#)

CareTrack Aged researchers launch a world-first set of indicators

IMPACT STORIES

Making a difference to communities

People from culturally and linguistically diverse backgrounds co-design care



Associate Professor Reema Harrison

People from culturally and linguistically diverse (CALD) backgrounds are more often exposed to harm from the healthcare they receive, often due to medication and communication errors. The CanEngage project has for the first time demonstrated that healthcare safety is a challenge for people from CALD backgrounds, and that current patient engagement techniques are not suitable for this population.

CanEngage is co-producing novel techniques to improve healthcare safety in cancer services across NSW and Victoria by increasing engagement from CALD patients and families in their care. A key component is the CanEngage Co-Facilitator Network – a group of consumers who are from CALD backgrounds and have relevant lived experiences that are co-leading CanEngage co-production groups. Co-facilitators have been trained by the research team and collaboratively work to address power imbalances and ensure an equitable design process. *ABC News* featured project lead, Associate Professor Reema Harrison and the co-facilitators on TV, print and digital networks.

Chauhan A, Leefe J, She EN, Harrison R. Optimising co-design with ethnic minority consumers. *International Journal for Equity in Health*. 2021;20(1):240. [↗](#)

Harrison R, Walton M, Manias E, Wilson C, Girgis A, Chin M, Leone D, Seale H, Smith AB, Chauhan A. Codesigning consumer engagement strategies with ethnic minority consumers in Australian cancer services: the CanEngage Project protocol. *BMJ Open*. 2021;11(8):e048389. [↗](#)

The CanEngage project is seeking to reduce harm and improve engagement

IMPACT STORIES

Making a difference to communities

Study reveals hospitalisation impacts school performance



Associate Professor Rebecca Mitchell

A suite of new research has provided evidence that hospitalisation for a traumatic injury or a chronic disease, such as asthma, can adversely impact children's school performance, including year 12 completion.

Lead researcher, Associate Professor Rebecca Mitchell, has used the findings to advocate for earlier detection of serious health conditions and for hospitalisation to be a flag for interventions.

Academic performance for young people who had been hospitalised for an injury, asthma, or a mental health disorder was compared to their matched peers. Young people who had been hospitalised for each of these conditions generally performed worse than their peers on assessments of numeracy and literacy and were less likely to finish high school.

Mitchell RJ, McMaugh A, Schniering C, Cameron CM, Lystad RP, Badgery-Parker T, Nielssen O. Mental disorders and their impact on school performance and high school completion by gender in Australia: a matched population-based cohort study. *Australian & New Zealand Journal of Psychiatry.* 2021 Dec 7. [↗](#)

Mitchell RJ, Cameron CM, McMaugh A, Lystad RP, Badgery-Parker T, Ryder T. The impact of childhood injury and injury severity on school performance and high school completion in Australia: a matched population-based retrospective cohort study. *BMC Pediatrics.* 2021; Sep 25;21:1-14. 426. [↗](#)

Mitchell RJ, McMaugh A, Homaira N, Lystad RP, Badgery Parker T, Cameron CM. The impact of childhood asthma on academic performance: a matched population based cohort study. *Clinical and Experimental Allergy.* 2022 Feb;52(2):286-296. [↗](#)

New findings for injury, asthma, and mental health

Research shows privacy issues with mobile health apps

Google has responded to privacy concerns raised in research published in the *British Medical Journal* by a team from AIHI and the Optus Macquarie University Cybersecurity Hub.

In a study of more than 15,000 free medical and health and fitness apps available on Google Play, researchers found 88% of apps had code that could potentially collect user data such as contact details and geolocation. While only 4% of apps were detected to be transmitting user information, this still represents an enormous amount of data, and the research indicated the figures could be much higher.

These apps include the management of health conditions and symptom checking, step and calorie counters, and menstruation trackers.

Privacy policies were non-existent in 28% of apps, and at least 24% of user data transmissions violated privacy policies.

The research was covered by more than 250 media outlets, and in response to the extensive publicity, Google initiated an investigation of app development policy breaches.

Tangari G, Ikram M, Ijaz K, Kaafar MA, Berkovsky S. Mobile health and privacy: cross sectional study. *The BMJ*. 2021;373:1-12. n1248. [↗](#)

Google responds to concerns raised



Our Higher Degree Researchers are undoubtedly the future of healthcare with their innovative ideas and dedicated approach.

Researchers of the future



LAURA DODDS

I started as a research assistant at AIHI and have since been provided the opportunity to commence a PhD scholarship investigating dementia prevention in rural and remote communities, a topic that I'm very passionate about. I've been able to expand my research and analytical skills, critical thinking and creativity. With the ongoing support from AIHI and the team I hope to graduate from my PhD and progress my career in public health and dementia risk reduction.

The collaborative culture and focus on progressing early career researchers at AIHI has allowed me to thrive both personally and professionally.



DR GREG VAN WYK

I am a medical doctor with clinical and pharmaceutical experience in multiple clinical domains, and a passion for clinical research and data science. Collectively, these attributes enabled me to explore a research topic at the intersection of multiple clinical disciplines by using robust statistical methods to analyse real-world Australian data. My MRes thesis explored the causal effects of routine angiography (with or without stenting or bypass surgery) vs. no angiography in frail elderly patients with non-ST-myocardial infarction or unstable angina. We observed that the routine approach recommended for non-frail patients resulted in a lower risk of death in frail patients. However, we observed that few frail patients were afforded routine invasive treatment.

I am grateful for the incredible support I received from the team at AIHI, and I am excited that our research may help to improve treatment for frail elderly people.

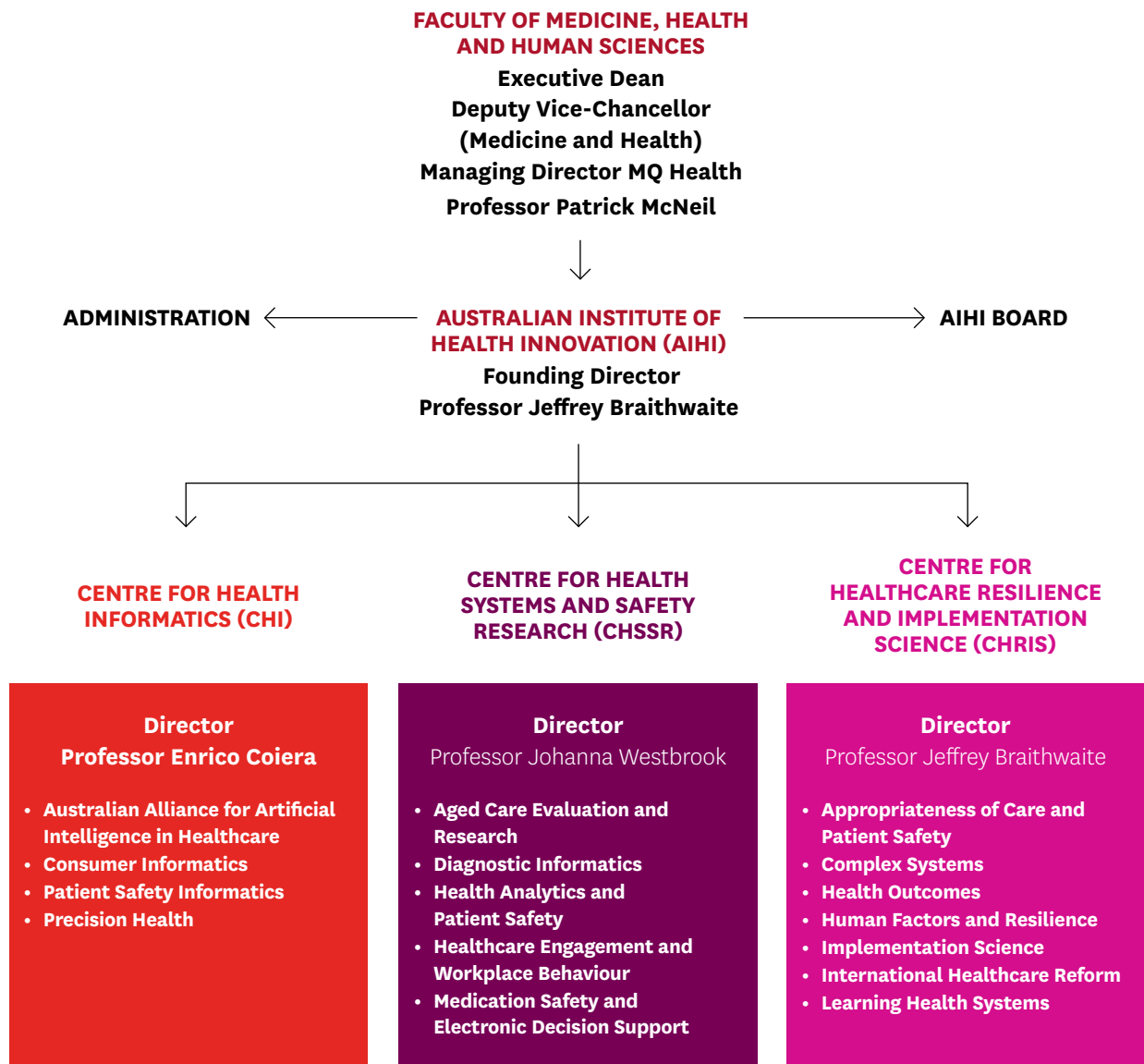


DR LUKE TESTA

My PhD evaluated the effectiveness of a hospital avoidance program for acutely unwell aged care facility residents and identified factors impacting health service utilisation in the care of acutely unwell residents. During my PhD candidature, I published an integrative review and three original research papers related to my thesis, as well as presenting at both a national and international conference. Having completed my PhD, I am now a postdoctoral researcher with AIHI.

AIHI has been an incredibly positive and supportive environment to study and work, providing me with ongoing opportunities to develop as a researcher.

Organisational structure



NHMRC PARTNERSHIP CENTRE FOR HEALTH SYSTEM SUSTAINABILITY
NHMRC CENTRE OF RESEARCH EXCELLENCE IN DIGITAL HEALTH
NHMRC CENTRE OF RESEARCH EXCELLENCE IN IMPLEMENTATION SCIENCE IN ONCOLOGY

Global themes: Patient Safety; Improvement Studies; Multidisciplinary Teamwork; Behaviour Change; International Health Reform; Digital Health; Aged Care

Our landmark Centres

AIHI is dedicated to improving the services and systems that deliver healthcare to individuals and communities. Central to this mission are the three highly productive and complementary Research Centres at the core of the Institute:

- Centre for Health Informatics [↗](#)
- Centre for Health Systems and Safety Research [↗](#)
- Centre for Healthcare Resilience and Implementation Science [↗](#)

These Centres are specialist powerhouses of expert research endeavour, as can be seen in the reports that follow. They also

collaborate extensively. The success of this model is witnessed by the three additional centres funded by the NHMRC and led by AIHI, shown in the organisational structure.

AIHI also contributes to higher degree research student supervision (PhD and MRes candidates) and to the Faculty of Medicine, Health, and Human Science's teaching programs. As part of MQ Health, Macquarie's academic health sciences centre, including Macquarie University Hospital, AIHI is at the heart of education and research, making a real difference within the community.





Centre for Health Informatics

We are firmly fixed on creating the next generation of innovations that are needed if our health system is to meet the waves of challenge now washing over it, from COVID-19 to climate change.

PROFESSOR ENRICO COIERA

The Centre for Health Informatics (CHI) took advantage of a lull in the COVID-19 pandemic at the beginning of 2021 to undertake centre-wide strategic planning activities, identifying several new research areas including:

- Family Informatics – focusses on supporting the whole family ‘team’ in health and illness;
- Turbulence Systems – redesigning health systems to be resilient to shocks like pandemics or climate change; and
- Reimagining the design of today’s cumbersome electronic health record systems.

We expect new work and publications in these areas to appear in 2022 as we strengthen our existing research portfolio with these new avenues of enquiry.

CHI had a highly successful year with our research impacting nationally and internationally and generating mainstream and specialist media coverage. We contributed in various ways to inform policy and practice including:

- CHI led the AAAiH to produce the Roadmap for AI in Healthcare for Australia
- Researchers participated in the development of the National Digital Health Strategy and Framework for Action led by the Australian Digital Health Agency
- Professor Coiera participated as Australia’s only representative on the OECD’s Global Partnership on AI Pandemic Support Group
- Professor Farah Magrabi was recognised in the inaugural Telstra Brilliant Women in Digital Health list and Professor Coiera was named by The Australian research magazine as the national field leader in medical informatics



Professor Enrico Coiera




Professor Farah Magrabi

Australian Alliance for Artificial Intelligence in Healthcare

The AAAiH, led by Professor Coiera, is committed to seeing Australia’s healthcare system stay at the very cutting edge globally. AI offers profound new opportunities to improve clinical diagnosis, treatment, and workflows. From the research bench to clinical bedside and into the hands of patients, AI promises to make Australian healthcare a learning system that is more nimble, adaptive, personalised, safe, and effective.

While Australia is well positioned to be a global leader in the real-world application of AI, as a nation, we have yet to develop clear plans for how that might happen, let alone invest at anywhere near the scale of other nations. We are currently largely unprepared to manage the opportunities and risks of an AI-enabled world.


ROADMAP FOR SAFE AI

During 2021, AAAiH released A Roadmap for AI in Healthcare  for Australia, the first plan to explore priorities for progressing the adoption of AI across the nation’s health services, based on feedback from the health system, industry, consumers, and government.

The Roadmap has been made widely available and contains 24 recommendations across eight priority areas, covering critical issues such as safety, quality and ethics, industry development, and consumer needs.


NEW FRAMEWORK ASSESSES AI SYSTEMS

AAAiH members have developed a framework to assess the functional, utility, and ethical aspects of AI systems called “Translational Evaluation of Healthcare Artificial Intelligence (TEHAI)”.

The TEHAI evaluation framework, developed with external expert input, has been published and is an open access publication in *BMJ Health & Care Informatics* . The framework has been developed to assess the functional, utility, and ethical aspects of AI systems. The key elements of TEHAI that differentiates it from other frameworks are its emphasis on translational and ethical features and its ability to be applied at any stage of the development and deployment of the AI system.



Australian Alliance for AI in Healthcare

Reddy S, Rogers W, Makinen V, Coera E, Brown P, Wenzel M, Weicken E, Ansari S, Mathur P, Casey A, Kelly B Evaluation framework to guide implementation of AI systems into healthcare settings. *BMJ Health & Care Informatics*. 2021;28:e100444. 

AAAiH MEMBER REGISTER

The Alliance Member Register was launched in March 2021. The online Register is designed to increase collaboration and translation opportunities for members of the AAAiH and provide a directory service that matches people, projects, and technology with Australian AI healthcare research projects.



Alliance Member Register



WEBINARS

AAAiH delivered two webinars on AI in healthcare:

- AI in Nursing Held on International Nurses’ Day. Australian and international experts spoke about how AI is revolutionizing nursing practice.
- Threat or opportunity: Will healthcare AI de-skill human clinicians? Run in conjunction with the University of Wollongong, the webinar presented preliminary findings from the NHMRC funded project “The Algorithm Will See You Now”.

For more information, please visit the AAAiH website aihealthalliance.org 



Australian Alliance for Artificial Intelligence in Healthcare

CHI Streams of research

CONSUMER INFORMATICS

Dr Annie Lau

annie.lau@mq.edu.au

Consumer Informatics investigates the science, design, and impact of digital health for patients and consumers. We are passionate about understanding and improving the health of individuals through the use of digital technology.

We work closely with patients, consumers, clinicians, and multidisciplinary colleagues to identify important gaps and develop innovative solutions together. We are also able to apply rigorous methods to test the boundaries of how digital technologies can improve health.

A new collaboration commenced with a start-up company, looking at whether assistive technology (e.g., GPS-enabled devices, falls alarm) can enable older people to live safely and independently at home. This is an important area of unmet need, which has been accentuated during the COVID-19 pandemic and the widespread lack of confidence in our aged care sector.

Dr Kathleen Yin's research on the positive impact of gaming on mental health during COVID-19 lockdowns was published in the *Journal of Medical Internet Research* and garnered extensive media interest.

Students Katrina David and Joshua Vazzoler were awarded High Distinction for their theses. New PhD candidates will be commencing in 2022 with topics investigating how digital health and

health services for patients and consumers have transformed during the COVID-19 pandemic.


PATIENT SAFETY INFORMATICS

Professor Farah Magrabi

farah.magrabi@mq.edu.au

AI touches every aspect of our lives. In healthcare, AI systems are supporting clinicians and consumers to make more precise care decisions that include data about genetic, environmental, and lifestyle factors. Rigorous evaluation is critical, but existing methods are not specific to AI. The Patient Safety Informatics program is developing and deploying methods to monitor AI quality and safety. This will ensure that AI is applied appropriately, that benefits are realised, and key risks are mitigated. Our work is used nationally and internationally by healthcare organisations, government departments, patient safety agencies, and industry.

Our research contributed to the UK Chartered Institute of Ergonomics and Human Factors White Paper on AI in Healthcare from a Human Factors/Ergonomics perspective. This White Paper aims to promote systems thinking among those who develop, regulate, procure, and use AI applications, and to raise awareness of the role of people using or affected by AI.

We also worked with ISQua's Fellowship Programme : AI and Patient Safety module. We developed a case study on "Implementing AI based

clinical decision support to detect patient safety incidents in real-world settings." The case study will benefit many healthcare professionals across a broad range of disciplines worldwide who are interested in improving their knowledge about patient safety and making a difference.

We collaborate extensively with researchers from the AAAIH and the CREIDH and our researchers secured international recognition as listed in the Awards section of this Annual Report.

PRECISION HEALTH

Professor Shlomo Berkovsky

shlomo.berkovsky@mq.edu.au

The Precision Health stream focusses on the use of AI to develop personalised patient models and predictions of diagnosis and care. The stream also studies how sensing technologies can be used to detect medical conditions, how clinicians and patients interact with health technologies, and how to preserve the privacy of medical data and AI.

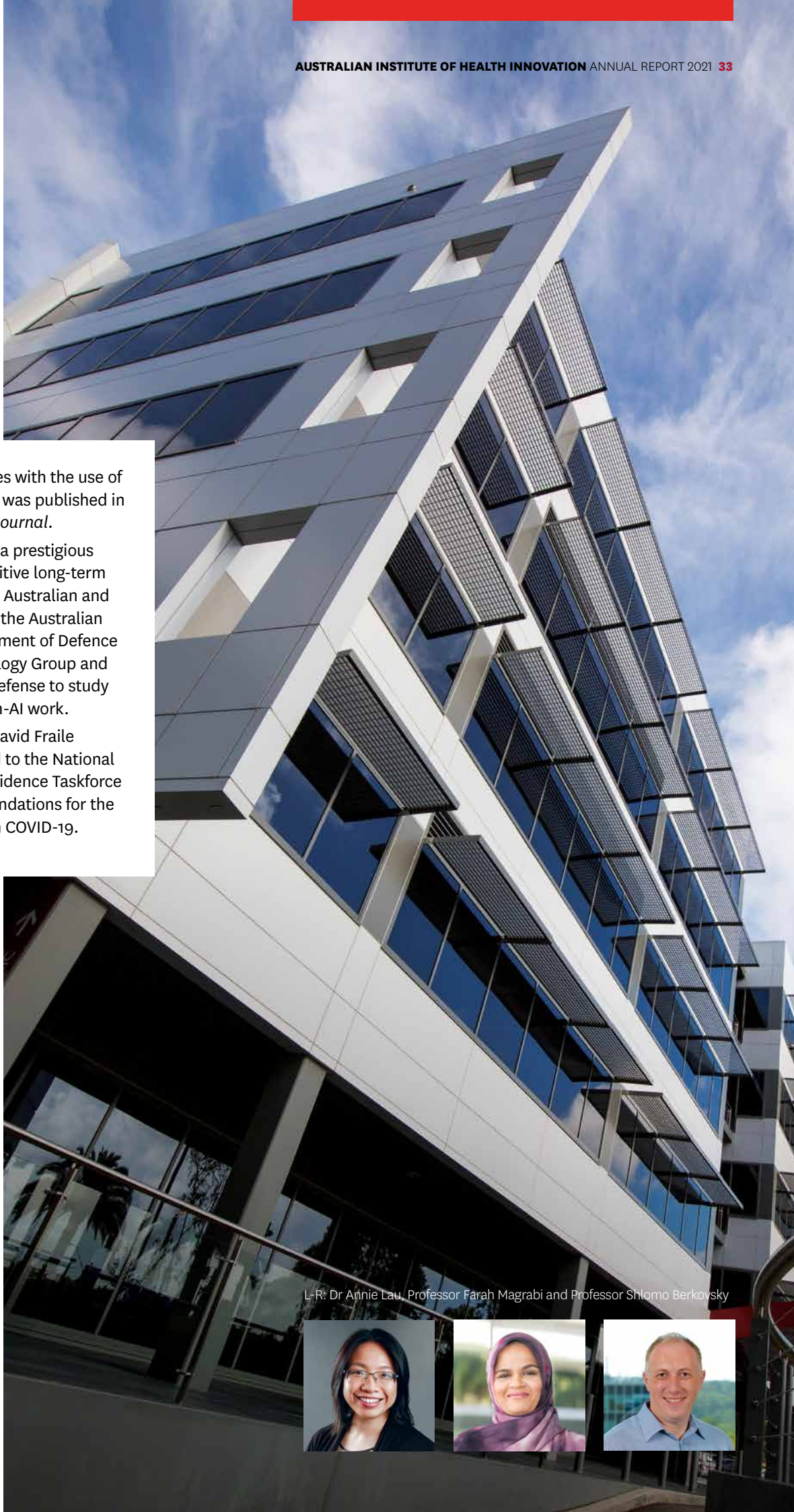
We undertake collaborative projects with healthcare organisations, leading national research groups and government bodies. Our collaborators include the Kolling Institute, Optus Macquarie University Cyber Security Hub, the Macquarie University Centre for Motor Neuron Diseases, Melanoma Institute Australia, and the Agency for Clinical Innovation.

Research conducted in conjunction with Optus Macquarie University Cybersecurity Hub uncovering

serious privacy issues with the use of mobile health apps, was published in the *British Medical Journal*.

The stream secured a prestigious grant highly competitive long-term grant along with top Australian and US universities from the Australian Government Department of Defence Science and Technology Group and US Department of Defense to study collaborative human-AI work.

PhD candidate, Dr David Fraile Navarro contributed to the National COVID-19 Clinical Evidence Taskforce delivering recommendations for the care of children with COVID-19.



L-R: Dr Annie Lau, Professor Farah Magrabi and Professor Shlomo Berkovsky



Centre for Health Systems and Safety Research

The close ties we have developed with our research partners has enabled us to deliver the highly applied research so valued by society.

PROFESSOR JOHANNA WESTBROOK

From hospitals to aged care services, health information technologies are designed to make things better – from greater efficiency to improved patient safety. However, the implementation of these technologies is complex and often disrupts healthcare delivery. The Centre for Health Systems and Safety Research (CHSSR) [↗](#) continues to tackle important research questions about how health information technologies can be designed, utilised, and deliver improved outcomes for Australians.

Effective information exchange, communication, and teamwork are essential elements of the patient safety puzzle. Through our design and application of complex multi-method evaluation models, our research is delivering high quality evidence to inform decision making and drive changes in healthcare policy and practice.

Our work continues to inform policy and practice, including:

- As part of a major Australian research collaboration addressing COVID-19 and the utilisation of electronic general practice data to establish effective care and best-practice policy, new reports were delivered about emerging trends related to COVID-19, its diagnosis, treatment and medications prescribed, and its impact on patients.
- Six evidence briefs were published for ACSQHC on interventions to improve medication safety.



Participants at a co-design workshop for people from culturally and linguistically diverse backgrounds.

CHSSR Streams of research

AGED CARE EVALUATION AND RESEARCH

Professor Johanna Westbrook
johanna.westbrook@mq.edu.au

The mission of the Aged Care Evaluation and Research (ACER) team is to improve the health and wellbeing of older Australians through evidence-based health services and optimisation of information technology systems. The ACER team is focussed on:

- Utilisation of aged care information systems to enhance care delivery through increasing accessibility, and to improve meaningful outcomes such as appropriate use of medications and quality of life.
- Incorporating digital health, such as clinical information systems, client-focussed health devices, and health and aged care data to support care coordination across an older person's healthcare journey.
- Co-designing research with relevant stakeholders including aged care clients and workforce.

During 2021, recommendations from the 'Driving digital connectivity in residential aged care and the private system with My Health Record' project were used by the Australian Digital Health Agency for expansion of the My Health Record system and secure messaging in aged care and specialist care sectors. This project was in conjunction with Sydney North PHN.

Professor Westbrook had the opportunity to share research

on the potential to improve care through optimal utilisation of aged care information systems during an interview with Dr Norman Swan for ABC Radio National The Health Report.

Brain BootCamp, a dementia risk reduction program for older adults, commenced in 2021. Preliminary results show there was a significant improvement in the awareness of dementia as a modifiable disease and a significant reduction in dementia risk.

DIAGNOSTIC INFORMATICS

Professor Andrew Georgiou
andrew.georgiou@mq.edu.au

Diagnostic informatics encompasses the role of digital health technology in generating, gathering, interpreting, and communicating pathology, medical imaging data, and information. It embraces many areas of the patient journey.

Diagnostic informatics is a key component of effective diagnostic stewardship and shared decision-making, aiming to ensure the most appropriate utilisation of diagnostic tests for therapeutic decision-making, leading to effective patient care and optimal health outcomes. A new NHMRC partnership grant commencing 2022 involving Macquarie University, South Eastern Sydney LHD, ACSQHC and NSW Health Pathology will contribute to the establishment of a digital health foundation for outcomes-based diagnostic excellence, safety and value.

The Diagnostic Informatics team is also part of a major Australian research collaboration resulting in a series of COVID-19 General Practice Snapshot publications based on electronic general practice data. The collaboration involves the DHCRC and PHNs.

The Snapshots provided timely and widely disseminated evidence about observed impacts of the COVID-19 pandemic in key general practice areas including aged care, medication prescribing, cancer screening, telehealth, and chronic disease. This evidence has informed critical quality improvement and education activities among PHN collaborators encompassing geographical areas in Victoria and NSW.

HEALTH ANALYTICS AND PATIENT SAFETY

Associate Professor Ling Li
ling.li@mq.edu.au

Health Analytics and Patient Safety focusses on enabling the use of healthcare data to improve patient care delivery and patient outcomes. Rich and dynamic healthcare data have been collected from different sources across healthcare systems. Rigorous and robust data analytics methods are needed to properly interpret the data and discover hidden issues and possibilities.

A key focus of research has been to support the early detection of sepsis, critical to facilitating prompt treatment and hence

L-R: Professor Johanna Westbrook, Professor Andrew Georgiou, Associate Professor Ling Li, Associate Professor Reema Harrison and Dr Magda Raban.



improving patient outcomes. Sepsis computerised clinical decision support (CCDS) systems are a recently emerging technology aimed at supporting clinicians in the identification of sepsis patients. Our team has completed two comprehensive scoping reviews on CCDS systems – one for adults and the other for paediatric, neonatal, and maternal inpatients. These timely reviews identify critical knowledge gaps.

In a first for NSW, we completed a report for Cancer Institute NSW on variations in care for pancreaticoduodenectomy in NSW. A cause for celebration was the three MD students who completed their research projects with us and were the first of their cohort to submit manuscripts.

HEALTHCARE ENGAGEMENT AND WORKPLACE BEHAVIOUR ↗

Associate Professor Reema Harrison

reema.harrison@mq.edu.au

Ensuring that staff and consumers are involved in decision-making about healthcare and the system in which it operates is critical for safe and good quality care. The Healthcare Engagement and Workplace Behaviour stream strives to facilitate engagement of staff and consumers in decision-making processes and the design of healthcare change and innovation.

We have widened access to co-design of healthcare change for people from seldom heard populations (including CALD groups, children and young people with intellectual disability, and their parents) by training co-researchers and publishing a co-authored resource to facilitate co-authorship plus two co-authored study protocols with consumers from these groups.

Highlights include:

- Establishment of the CanEngage Co-facilitator Network which is a group of 10 consumers and multi-lingual fieldworkers who are trained in co-design facilitation.
- Pioneering and applying a novel approach to Experience-Based Co-Design with culturally diverse communities.
- Delivering the Clinician Experience Measure (CEM) for state-wide application in evaluating value-based care projects.

MEDICATION SAFETY AND ELECTRONIC DECISION SUPPORT ↗

Dr Magda Raban

magda.raban@mq.edu.au

Medication error and inappropriate medication therapy are two of the oldest, and most costly, safety problems faced by health systems. The Medication Safety and Electronic Decision Support research stream investigates ways in which digital technology can reduce medication errors, support medication therapy

decisions, and improve patient outcomes. Our research spans multiple health settings, including hospitals and residential aged care. We apply a broad range of methods to understand how digital technology is used and identify well-designed and poorly designed system features.

A series of six evidence briefs for ACSQHC were produced on interventions to improve medication safety ↗.

As part of a partnership project with the Sydney Children’s Hospitals Network, five recommendations for electronic medication system modifications made by the research team have been implemented.

Demonstrating the highly applied nature of the stream’s work, our research on antibiotic use in residential aged care was covered by *Aged Care Insite*, *Inside Ageing* and *Australian Ageing Agenda*.

We also supported development of ACSQHC’s resources on the implementation of electronic medication charts and prescribing in aged care.

Centre for Healthcare Resilience and Implementation Science

The need for our rigorous approach to inquiry has never been clearer than it is today, in the shadow of a pandemic. We are committed to continuing our highly valuable research to improve health systems around the world.

PROFESSOR JEFFREY BRAITHWAITE

Researchers from the Centre for Healthcare Resilience and Implementation Science (CHRIS) are leaders in the study of complexity science, human factors, resilience in healthcare setting, implementation science, and patient safety. We address complex problems, adopt evidence, translate this into practice to improve delivery systems, and design new models of care.

CHRIS, led by Professor Braithwaite, is reconceptualising healthcare research to build more resilient systems. We pursue highly collaborative, multidisciplinary research to ensure research findings are translated into better and more cost-effective, sustainable care.

CHRIS is integral to the NHMRC Partnership Centre for Health System Sustainability (PCHSS) and the NHMRC Centre of Research Excellence in Implementation Science in Oncology (CRE-ISO). We also work with international bodies including the WHO, OECD, ISQua, and the Society for Organisational Behaviour in Health Care to support global healthcare reform.

Our highlights for the year include:

- Publication of results from a multinational survey of 1131 health system staff in 97 countries to better understand COVID-19 management strategies.
- In conjunction with the PCHSS and Consumers Health Forum of Australia, results were published from a nationwide survey of adult Australians gauging their opinions about the healthcare system including access to and affordability of healthcare.
- CareTrack Aged was invited by the Department of Health to share their work on indicators measuring appropriateness of care in residential aged care facilities.
- A risk assessment project for the Medical Council of NSW, using over 20 years of Medical Council data, was completed to assist in identifying doctors at risk of impaired performance and malpractice.
- With leading implementation scientists worldwide, and co-edited by Professors Frances Rapport and Braithwaite, and Associate Professor Robyn Clay-Williams, the book, *Key Concepts in Implementation Science* was published.



Dr Kate Churruca

CHRIS Streams of research

APPROPRIATENESS OF CARE AND PATIENT SAFETY

**Associate Professor Peter Hibbert,
Professor Jeffrey Braithwaite**
peter.hibbert@mq.edu.au

Appropriateness of Care and Patient Safety research stream aims to research the level of evidence-based or best practice healthcare that Australians receive. This is important because if evidence-based care is not delivered to patients reliably they can be subject to misdiagnoses, or delayed treatments, or suffer harm.

The NHMRC funded CareTrack Aged project, focussed on the delivery of evidence-based care in aged care facilities, has developed the world's first comprehensive set of process indicators in aged care.

From our CareTrack Kids NHMRC Partnership Grant, we published papers in the clinical areas of gastro-oesophageal reflux and attention deficit hyperactivity disorder.

The CareTrack method has now been used to assess the effectiveness of healthcare accreditation in a European setting.

Associate Professor Hibbert taught on Harvard University's International Safety, Quality, Informatics and Leadership Program on conducting patient safety investigations.

COMPLEX SYSTEMS

**Professor Jeffrey Braithwaite,
Dr Janet Long, Dr Louise Ellis,
Dr Kate Churruca**
janet.long@mq.edu.au

Complex Systems explores ways to capture, leverage and embrace the intricacies and multifaceted nature of healthcare. In a Complex Adaptive System, with diverse agents (patients, providers, governments) constantly interacting with each other and their environment (clinical processes, complicated technologies), a holistic approach is required to improve care.

We focus on organisational culture and context and their influence on care delivery, and implementation of best practice and new treatment advances, including in genomic medicine and mental health. Projects include the Medical Research Futures Fund Keeping Australians out of Hospital; a range of genomic research projects (Mackenzie's Mission: the Australian Reproductive Genetic Carrier Screening Project and Acute Care Genomics, both funded by the Genomics Health Futures Mission); implementation of consensus guidelines for management of patients with mitochondrial disorders (The Mito Foundation); stakeholder analysis of the virtual triage service, Healthdirect; and empirical work on the application of Broken Windows Theory to hospitals.

The value of our research is demonstrated by substantial grant success listed in the Grants section of this report.

In key research progress, Mackenzie's Mission (the Australian Reproductive Genetic Carrier Screening Project) reached a milestone in 2021 of providing screening in all states of Australia and has now enrolled more than 5,000 couples. We are working with clinics and general practitioners to streamline access to the test.

We also published a highly regarded paper on "A dynamic systems view of clinical genomics: a rich picture of the landscape in Australia using a complexity science lens".

HEALTH AND SOCIETAL OUTCOMES

**Associate Professor
Rebecca Mitchell**
r.mitchell@mq.edu.au

The Health Outcomes Stream conduct population-level epidemiological and mixed-method research to guide improvements in health service delivery and health policy. We examine different aspects of injury and disease in the population and identify where health and social outcomes could be improved.

Important research published this year provided evidence to show that injured young people have a higher risk of not achieving the national minimum standards for numeracy and reading compared to their matched peers and are almost twice as likely not to complete year 12.

Dr Luke Testa was awarded his PhD on 'Factors influencing care transitions for older people between residential aged care and hospital services' and Alexander Alevras was awarded his Masters of Research for 'Improving injury/illness surveillance and prevention in amateur boxing'.

HUMAN FACTORS AND RESILIENCE

**Associate Professor
Robyn Clay-Williams**

robyn.clay-williams@mq.edu.au

Human Factors and Resilience focusses on creating health systems that function effectively in the presence of complexity and uncertainty. Our team provides a vital contribution, nationally and internationally, to understanding how healthcare systems function, and how to make them safer for patients.

In 2021, our research in health service and system design, in combination with our expertise in human factors methods, produced new tools to assist in understanding complex health systems and improve their functioning. We completed development of Cognitive Work Analysis and Functional Resonance Analysis Models of NSW hospital emergency departments (ED). These models can be used to design, implement, and test new interventions in EDs to improve patient care.

Our risk assessment project for the Medical Council of NSW, which used over 20 years of Medical Council data to produce machine learning algorithms to assist in identifying

doctors at risk of impaired performance and malpractice, was completed.

We started a new project to develop innovative models of care for a new hospital for NSW Health, the Rouse Hill Development Project. The project will triangulate data on the demographics of the hospital catchment population; evidence-based models of care synthesised from the peer-reviewed literature; and consultations with consumers, providers, and other hospital stakeholders on their healthcare needs and expectations for the new hospital. The findings will be used to develop the Clinical Services Plan for the new hospital.

As part of this project, we facilitated workshops that consulted with over 140 community members including culturally and linguistically diverse, and Aboriginal community members.

IMPLEMENTATION SCIENCE

Professor Frances Rapport
frances.rapport@mq.edu.au

The focus of the Implementation Science research stream is to propel high quality research outcomes into informing healthcare policy and practice. We aim to ensure study findings make a difference to the way clinicians practice and health services are managed, so people and systems perform to a high standard. We strive to deliver clear translational pathways to drive health research results to the next level, towards interventions that have traction at the coalface of healthcare delivery. We specialise

in research in chronic conditions, including melanoma, epilepsy, and hearing health.

A paper on the importance of getting the balance right between theory and practice in implementation science was published in the *Journal of Evaluation in Clinical Practice*. We also published the first Australian protocol for a study examining the role of the epilepsy nurse in the patient's care journey in *BMJ Open*.

A key highlight was publication of a new book with leading implementation scientists worldwide: *Key Concepts in Implementation Science* (eds., Rapport, Clay-Williams, Braithwaite; Routledge, Oxford).

INTERNATIONAL HEALTHCARE REFORM

Professor Jeffrey Braithwaite
jeffrey.braithwaite@mq.edu.au

International Healthcare Reform focusses on comparative health reform efforts in low-, middle-, and high-income countries and their efforts to make system improvements. Two book series have been produced in this field: one, on international efforts to understand resilient healthcare, and another on 152 different countries' reform activities.

In conjunction with ISQua and the Italian Network for Safety in Health Care, we surveyed 1131 health system staff in 97 countries to better understand COVID-19 management strategies. Results were published in the *International Journal for Quality in Health Care*.

LEARNING HEALTH SYSTEMS

**Professor Jeffrey Braithwaite
and Associate Professor
Yvonne Zurynski**

jeffrey.braithwaite@mq.edu.au

Learning health systems (LHS) are designed to translate data (from all sources including patients and research) to create new knowledge which directly informs patient care – and forms a continuous cycle of improvement. Many health systems are now on the journey to adopting core features of an LHS. While some health systems have started to address the infrastructure needed to collate and utilise the massive amounts of data generated through routine care and research, changes in culture and leadership, as well as incentives to support the uptake of an LHS, are often lacking.

We meet regularly with the US Steering Committee on The Learning Healthcare System in America (affiliated with George Washington University), to strategise ways to facilitate the uptake and spread of LHS principles. The committee is drawing heavily on our published White Paper (Mapping the Learning Health System: a scoping review of current evidence. A white paper) [↗](#) to develop an online toolkit to facilitate the development and evaluation of LHSs.

L-R: Associate Professor Peter Hibbert, Professor Jeffrey Braithwaite, Dr Janet Long, Associate Professor Rebecca Mitchell, Associate Professor Robyn Clay-Williams, Professor Frances Rapport and Associate Professor Yvonne Zurynski





Health System Sustainability
NHMRC Partnership Centre

NHMRC Partnership Centre for Health System Sustainability



PCHSS Investigators

OUR VISION

To produce research that contributes to the development of a resilient health system—one that is affordable, cost-effective, and delivers improved health outcomes for all Australians.

\$10.75m

Five year collaboration

17

Lead investigators from seven universities

20

Expert advisors

>40

System implementation partners from around Australia



The Centre is led by Professor Jeffrey Braithwaite



In 2021, the Centre continued to publish and disseminate its internationally recognised research into improving health services and systems.



PCHSS LEAD INVESTIGATORS AND PARTNER ORGANISATIONS



WESTERN AUSTRALIA

Dr Delia Hendrie^{RL}
 Prof Elizabeth Geelhoed^{RL}
 Dr Darren Gibson^{RL}
 WA Dept of Health*

NORTHERN TERRITORY

Department of Health, NT*

SOUTH AUSTRALIA

Prof Jon Karnon^{RL}
 PHN Country SA*
 PHN Adelaide*

VICTORIA

Prof Tony Scott^{RL}
 Prof Rachele Buchbinder AO^{RL}
 Prof Helena Teede^{RL}
 Circle Health*
 Monash Partners*
 Dept of HHS Victoria*
 PHN South Eastern
 Melbourne*
 Cabrini Health*

TASMANIA

University of Tasmania*
 Dept of HHS Tasmania*
 PHN Primary Health Tasmania*

QUEENSLAND

Prof Paul Glasziou^{RL}
 Prof Leonard Gray^{RL}
 Prof Robyn Ward AM^{RL}
 Metro South Health*
 Queensland Health*
 PHN Brisbane South*
 James Cook University*

NEW SOUTH WALES

Prof Jeffrey Braithwaite^{CIA}
 Prof Enrico Coiera^{RL}
 Prof Johanna Westbrook^{RL}
 Dr Teresa Anderson^{RL}
 Dr Jean-Frédéric Levesque^{RL}
 Mr George Leipnik^{RL}
 Mr James Downie^{RL}
 Prof Christine Bennett AO^{RL}
 Ms Annette Schmiede^{RL}
 Sydney LHD and Sydney
 Health Partners*
 Macquarie University Hospital*
 PHN Sydney North
 Health Network*

ACT

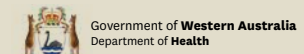
Ms Leanne Wells^{RL}
 ACT Health*

NATIONAL COLLABORATORS

Consumers Health Forum of Australia
 Aged Care Guild
 Independent Hospital Pricing Association
 HammondCare

CIA – Chief investigator first listed
 RL – Research lead investigator
 * System-based implementation partner organisation

FUNDING PARTNERS



The Governance Authority for the PCHSS comprises representatives of the NHMRC and its Funding Partners: Bupa Health Foundation, NSW Health, University of Notre Dame, and Western Australia Department of Health. It is currently co-chaired by Associate Professor Annette Schmiede, former Executive Leader of Bupa Health Foundation, and Mr George Leipnik from the NSW Ministry of Health.



WHAT DOES THE PARTNERSHIP CENTRE DO?

We are committed to generating and disseminating ideas and evidence to improve the performance of the health system so that it delivers care efficiently and effectively over the long-term. Our Centre seeks to maximise health system improvement in the real-world by bringing together people who provide, plan, consume, and need healthcare.

ACHIEVEMENTS IN 2021

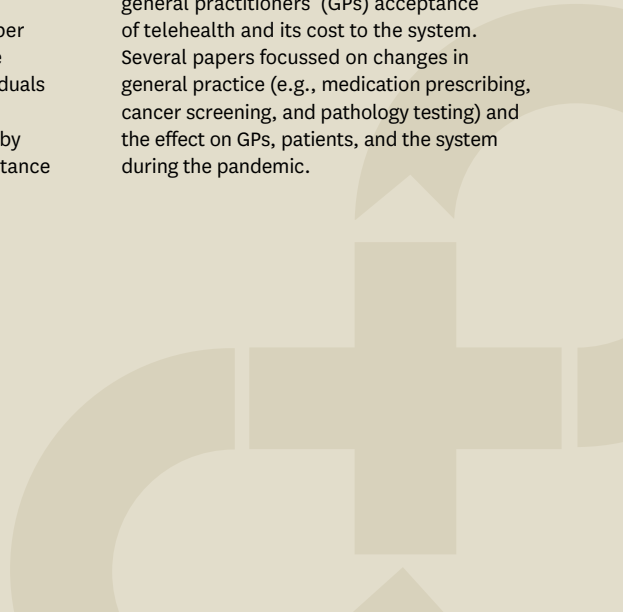
At the 2021 Research Excellence Awards on 30 November 2021, the PCHSS was awarded the Macquarie University Excellence in Research: Five Future-shaping Research Priorities – Healthy People. This award recognises exceptional research collaborations that have made a material impact on healthcare in Australia.

In 2021, PCHSS researchers published over 170 peer-reviewed papers and reports on topics of importance to the sustainability of national and international health systems, despite the challenges presented to research within the health system by the pandemic. Our publications included 26 papers that specifically contributed to the understanding of the impact of the COVID-19 pandemic on health consumers and health systems.

Examples of our publications include a new thematic framework to understand the consequences of changes in disease definitions for individuals, families, carers, and the health system; a paper on the efficacy of social norm nudge interventions (ones that inform individuals of others’ behaviour) in reducing inappropriate antibiotic prescribing by general practitioners; and the importance

of increasing funding for health services and public health research and research translation. We published the Macquarie Indexes of Healthcare Productivity, which provide a set of nationally consistent and disaggregated indexes of hospital service delivery for states and territories in Australia.

Our COVID-19 related publications investigated the impact of lockdowns on mental wellbeing and changes in healthcare seeking behaviour during the pandemic. We also examined health consumers’ and general practitioners’ (GPs) acceptance of telehealth and its cost to the system. Several papers focussed on changes in general practice (e.g., medication prescribing, cancer screening, and pathology testing) and the effect on GPs, patients, and the system during the pandemic.





PCHSS' research generated over 130 radio, television, news articles, and commentaries in the popular press, demonstrating the importance of our findings to public discourse. We continued our 2020-2021 webinar series with five webinars on important current topics.

PCHSS also hosted two half-day webinars with national and international speakers. The "Creating a value-based, integrated health system in Australia" webinar unpacked the challenges and opportunities for developing and implementing a value-based health system for patients whilst moving away from the current focus on the volume of care provided. The December "Exploring the Nexus of Climate Change, Human Health, and Healthcare System Sustainability" webinar included 15 distinguished speakers who discussed the impact of climate change on human health and health system sustainability and potential solutions for reducing the carbon footprint of healthcare. The event was comprehensively covered by *Croakey News* and other news sources. The webinars, and videos of these and our other events, are available on the PCHSS YouTube channel.

We worked closely with partners and collaborators, including over 60 health system researchers, 47 non-academic institutions, and health consumer researchers. We extended our collaboration with health consumer organisations, such as Consumer Health Forum of Australia (CHF), Health Consumers NSW, and Rare Voices Australia, to promote the co-design of research that supports system improvement.

PCHSS investigators generated \$37 million in new grant funding in 2021. Two NHMRC Centre of Research Excellence grants were funded, one on improving arthritis care and the other on providing better-value care.

Visit our website: healthsystemsustainability.com.au

179

Publications

>\$37m

Leveraged funding

>130

Media engagements

60

Health system collaborators

THE THREE BROAD THEMES OF OUR RESEARCH



Using analytics, technology and shared data



Reducing waste and low-value care



Promoting better value for the health dollar



This research theme tackles important questions in informatics and healthcare, including using big data to improve care, diagnostic testing, and medication management, as well as designing analytics to guide better healthcare decisions.

USING ANALYTICS, TECHNOLOGY, AND SHARED DATA

Professors Johanna Westbrook, Enrico Coiera, and Len Gray

HIGHLIGHTS

PATIENT SAFETY IMPROVEMENTS

Professor Westbrook and colleagues prepared a series of six practice and policy briefings for the ACSQHC for nation-wide distribution on the use of medication management technologies. The Stream also began their large trial of nudge interventions to improve medication management in residential aged care.

AI IN HEALTHCARE OPTIMISATION

Professor Coiera and colleagues are developing a decision support tool to improve the care provided to frail aged patients in hospitals and EDs. This work, in conjunction with the Agency for Clinical Innovation, researchers at the University of Sydney and University of New South Wales, uses AI to cluster patients according to their characteristics to determine appropriate treatments, procedures, and care pathways.

TELEHEALTH EVALUATION

Telehealth has been a valuable tool for providing care while keeping health professionals and patients safe during the COVID-19 pandemic. Professor Gray and collaborators completed a systematic review of the economic evidence for remote patient monitoring (RPM), a type of asynchronous telehealth where data are collected and later sent to a health professional prior to the patient consultation. They found that compared to usual care, RPM was highly cost-effective for hypertension.



Professor Paul Glasziou

REDUCING WASTE AND LOW-VALUE CARE

Professors Paul Glasziou and Rachelle Buchbinder AO

Approximately 30% of delivered healthcare is wasteful or of low value. Researchers from this stream are finding ways to reduce wasteful expenditure and to deliver needed care more cost-effectively.

HIGHLIGHTS OVER-DIAGNOSIS UNDER THE SPOTLIGHT

Professors Glasziou and Buchbinder led a collaborative trial with the Australian Government Department of Health (DoH). The trial demonstrated that an intervention that feeds back performance data to high-requesting GPs can significantly reduce musculoskeletal diagnostic imaging on a national scale. Their collaboration with DoH is also supporting best practice use of performance feedback for improving professional practice in other areas of clinical practice (e.g., pathology test requesting).

LEADERSHIP RECOGNITION

We congratulate Professor Glasziou on being named the country's top researcher in epidemiology by *The Australian*. *The Australian's* 2021 Research magazine names the top researcher based on the number of citations for papers published in the top 20 journals in each field over the past five years.



PROMOTING BETTER VALUE FOR THE HEALTH DOLLAR

Professors Tony Scott and Jon Karnon, and Dr Delia Hendrie

This research theme covers four areas:

- 1) using financial incentives to promote value-based healthcare,
- 2) priority setting and decision-making in healthcare organisations,
- 3) the impact of markets, competition, and choice in healthcare, and
- 4) the impact of a collaborative research program on cost savings and efficiencies in healthcare settings.

HIGHLIGHTS **VALUABLE ASSESSMENTS**

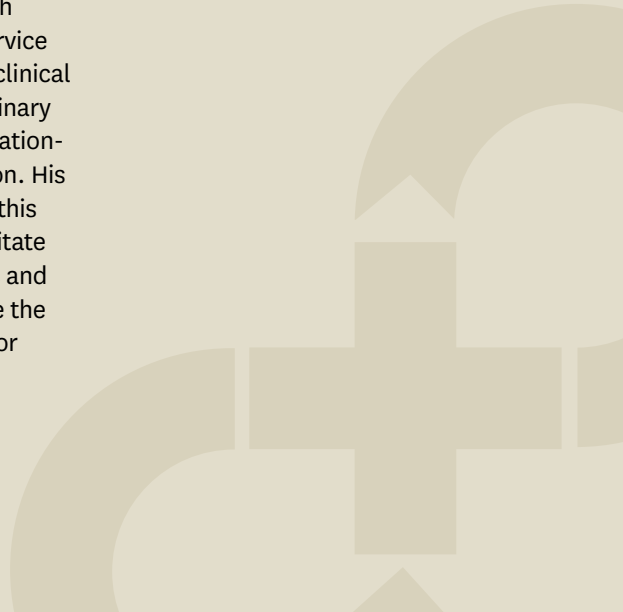
Professor Scott's team's research on the impact of the Medicare Benefit Scheme (MBS) review (covering the early period of the review 2016 to June 2019) revealed that it did not increase medical expenditures, volumes of services, or fees. Their work on aged care quality and pricing found that government-owned facilities provided higher quality care and charge lower prices.

DECISION-MAKING SUPPORT

Professor Karnon's collaboration with the Southern Adelaide Local Health Network on the use of research methods to support health service decision-making is informing clinical policies on hypoglycaemia, urinary tract infections, and on occupation-related violence and aggression. His team secured five new grants this year for projects that will facilitate the use of patient experiences and outcomes in care and increase the use of economic evaluations for business cases.

RESEARCH TRANSLATION **PROGRAM EVALUATION**

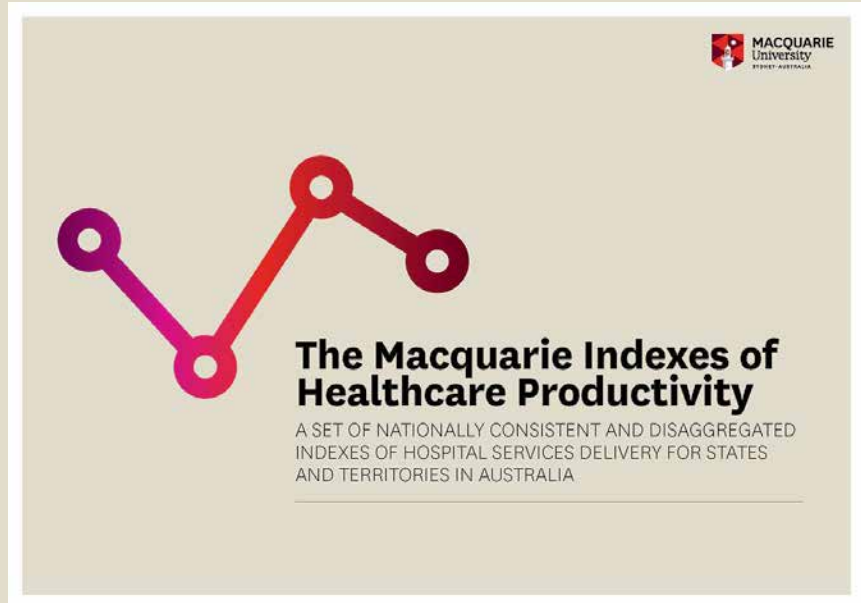
Dr Hendrie's team are evaluating the impact of the WA Department of Health Research Translation Program (RTP). They are using a realist evaluation and program theory development to examine the mechanisms by which the RTP program contributes to health system sustainability. This collaborative project will help shape future funding initiatives to improve research translation.





Associate Professor Yvonne Zurynski

The Observatory oversees Partnership-wide activities, coordinates engagement with investigators, stakeholders, and funders, and conducts research.



The Macquarie Indexes of Healthcare Productivity provides a set of nationally consistent and disaggregated indexes of hospital service delivery for states and territories in Australia.

OBSERVATORY ON HEALTH SYSTEM SUSTAINABILITY

Professor Jeffrey Braithwaite and Associate Professor Yvonne Zurynski

HIGHLIGHTS

The Observatory published research on a range of topics including recommendations for improving the funding of translational research and prioritising care in aged care; understanding the reality of how work is conducted in hospitals; and the importance of local context when implementing mental health services for suicide prevention.

Professor Braithwaite and colleagues continued to further our understanding of national and international health systems' responses to the ongoing COVID-19 pandemic. Their work examined patient safety, quality of care, and policy implications during the time of the pandemic, highlighting the need for policymakers to be proactive in recognising the complexity of health systems.

In conjunction with the Consumers Health Forum of Australia, the Observatory conducted a new survey that canvassed the experiences and opinions of over 5,000 Australian health consumers. Comparisons with our 2018 survey will provide a unique view of health consumers' perspectives and experiences of the health system during the COVID-19 pandemic.

NHMRC Centre of Research Excellence in Digital Health

The NHMRC Centre of Research Excellence in Digital Health (CREiDH) is a national research centre bringing together Australia's major health informatic research groups. Working with healthcare data, AI tools and techniques, and together with our partners, collaborators, and front-line healthcare providers, CREiDH addresses key issues to drive the development of a fully integrated and digitally enabled Australian healthcare system. CREiDH targets major evidence gaps that exist in our understanding of how to successfully implement and monitor digital health in Australia.

CREiDH is led by Professor Coiera and administered by AIHI, with full details on our website: digitalhealth.edu.au

HIGHLIGHTS ARTIFICIAL INTELLIGENCE SAFETY

Our review of AI-based medical devices approved by the US Food and Drug Administration (FDA) received the Editor's Choice award in *BMJ Health Care and Informatics*.

Lyell D, Coiera E, Chen J, Shah P, Magrabi F. How machine learning is embedded to support clinician decision making: an analysis of FDA-approved medical devices. *BMJ Health Care and Informatics*. 2021;28.

We also developed a novel framework to evaluate AI autonomy based on the division of tasks between clinician and AI. The framework has been incorporated into the UK Chartered Institute of Ergonomics and Human Factors White Paper on AI in healthcare. Building on the review, we are examining the clinical risks of AI in the real-world by analysing safety events submitted to the FDA over a 6-year period.

THE SYSTEMATIC REVIEW ACCELERATOR (SRA)

Professor Glasziou and the SRA team from Bond University have developed an award-winning methodology for conducting systematic reviews in just two weeks, with the automation tools used made freely available.

FELLOWSHIP BY TRAINING PROGRAM

CREiDH has proudly handed over Australia's first formal Fellowship program in informatics to the Australasian Institute of Digital Health for ongoing custodianship.

Dr Mohamed Khalifa (AIHI), Dr Leanna Woods and Dr Tobias Hodgson (AIHI) successfully completed the Fellowship by Training Program in 2021.

CHIEF INVESTIGATORS

Professor Enrico Coiera
AIHI, Macquarie University

Professor Paul Glasziou
Bond University

Dr David Hansen
CSIRO Australian e-Health Research Centre

Professor Teng Liaw
University of New South Wales

Professor Farah Magrabi
AIHI, Macquarie University

Professor Vitali Sintchenko
University of Sydney

Professor Karin Verspoor
University of Melbourne

Dr Annie Lau
AIHI, Macquarie University

NHMRC Centre of Research Excellence

IN IMPLEMENTATION SCIENCE IN ONCOLOGY

The NHMRC Centre of Research Excellence in Implementation Science in Oncology (CRE-ISO) seeks to facilitate the efficient provision of evidence-based cancer service delivery, by understanding the structural impediments and potential facilitators of evidence uptake and suggesting ways to address barriers and take advantage of opportunities.

CRE-ISO also seeks to facilitate the shift from a narrow focus on morbidity and mortality to give equal consideration to patient experience and quality of life. As the population ages and cancer survivors become more numerous, we need to move to efficient provision of evidence-based care that enhances patient quality of life.

CRE-ISO is led by Professor Braithwaite with Dr Gaston Arnolda.

CRE-ISO produced two milestone publications of our qualitative research characterising outpatient oncology care. One provided an overview of oncology care provision as a complex adaptive system, and the other focussed on the challenges of CALD populations.

PUBLICATION HIGHLIGHTS

Nic Giolla Easpaig B, Tran Y, Winata T, Lamprell K, Fajardo Pulido D, Arnolda G, Delaney GP, Liauw W, Smith K, Avery S, Rigg K, Westbrook JI, Olver I, Currow D, Karnon J, Ward RL, Braithwaite J. The complexities, coordination, culture and capacities that characterise the delivery of oncology services in the common areas of ambulatory settings. *BMC Health Services Research*. 2022 Feb 12;22(1):1-15. 190. [↗](#)

Nic Giolla Easpaig B, Tran Y, Winata T, Lamprell K, Fajardo Pulido D, Arnolda G, Delaney GP, Liauw W, Smith K, Avery S, Rigg K, Westbrook JI, Olver I, Currow D, Girgis A, Karnon J, Ward RL, Braithwaite J. Providing outpatient cancer care for CALD patients: a qualitative study. *BMC Research Notes*. 2021 Aug 9; 14(1):1-8. 304. [↗](#)

With the continued pandemic induced restrictions to hospital access, CRE-ISO is focussing on exploiting openly available data sources, to demonstrate the value that can be derived from these. Projects include:

- 1) qualitative research using patient-reported stories;
- 2) quantitative research using cancer registry data and patient experience survey data; and
- 3) systematic reviews of published data on cancer staffing and telemedicine in oncology service provision.



Dr Gaston Arnolda

For more information, visit our website:

creiso.edu.au [↗](#)



CHIEF INVESTIGATORS

Professor Jeffrey Braithwaite
AIHI, Macquarie University

Professor Robyn Ward AM
University of Sydney

Professor David Currow
Flinders University

Professor Geoff Delaney
South-Western Sydney LHD

Professor Richard Kefford AM
Macquarie University

Professor Ian Olver AM
University of Adelaide

Professor Jonathan Karnon
Flinders University

Professor Phil Crowe
University of New South Wales

Associate Professor Winston Liauw
South-Eastern Sydney LHD

Professor Johanna Westbrook
AIHI, Macquarie University

Higher degree research program

2021 HIGHLIGHTS



PhD

23 Candidates
2 Thesis Submissions



MRes

6 Candidates
3 Thesis Submissions

The Higher Degree Research (HDR) program of the Australian Institute of Health Innovation has been developed for experienced practitioners who wish to pursue a deeper investigation of the world of health innovation. Macquarie University's HDR programs provide a multi-disciplinary, collaborative environment where our staff of experienced research experts support the HDR candidates through astute supervision and responsive guidance.

At AIHI, postgraduate candidates can pursue several higher degree qualifications: Master of Research (MRes), Master of Philosophy, and Doctor of Philosophy (PhD). Our postgraduate programs place a strong emphasis on academic excellence as well as professional development. The programs can be undertaken either as a full-time engagement or on a part-time basis, and scholarships are available for full-time candidates. Pastdoctoral candidates have progressed to senior roles in academia, health services, and industry, both locally and internationally.

Read about our programs and be inspired with profiles of our PhD and Masters graduates on our website. [↗](#)





REAL WORLD LEARNING WITH PACE

The multi-award winning PACE (Professional and Community Engagement) program at Macquarie University supports undergraduate students with authentic workplace experiences. In 2021, AIHI hosted PACE students, placing them alongside academics and professional staff to participate in projects ranging from medical informatics to aged care.

Doctor of Medicine Research Program

The Macquarie University Doctor of Medicine (Macquarie MD) is designed for students with a high level of achievement in tertiary study, who engage in a wide variety of activities during the four-year course; have the interpersonal skills desirable in a medical student and doctor; and the resilience, commitment, and desire to help improve the health of Australian and global communities.

Embedded into the Macquarie MD is a rigorous structured research program developing key research skills where the students work on a research project focussing on an aspect of health systems, patient safety and quality, clinical research, health services research, or public health. The Australian Institute of Health Innovation has a small team, led by Professor Frances Rapport, designated to oversee the research program on behalf of the Faculty of Medicine, Health and Human Sciences.

2021 saw the first cohort of MD students graduate.



Final year MD students enjoy a return to campus after pandemic restrictions lift

Our staff



Khalia Achermann

AIHI is thriving with more than 223 academic and professional staff and honorary appointments. We attract highly skilled clinicians, pharmacists, scientists, engineers, epidemiologists, statisticians, psychologists, and analysts who develop expert communities of practice, multi-disciplinary research teams, and synergistic networking and co-authorship. A full list of staff is available on our website. [↗](#)

AIHI academic and professional staff deserve the highest regard for their

resilience during the challenging year of 2021. With their dedication and professionalism, we were able to adapt to COVID-safe work practices and maintain or adjust our programs of research. We formed new collaborations and benefitted from the support of long-term working relationships.

We are proud to have coordinated the UN Women International Women's Day event at AIHI, and drew attention to the WHO's World Patient Safety Day and World Sepsis Day.

Awards and recognition

Professor Braithwaite received the Australian Healthcare and Hospitals Association Sidney Sax Medal 2021 for health policy leadership and outstanding contributions to health research.

The Australian's 2021 Research magazine named Professor Coiera as the national leader for medical informatics, and Macquarie University as the top research institution in the country for medical informatics.

Professor Magrabi was named in the inaugural Telstra Brilliant Women in Digital Health list.

Associate Professor Robyn Clay-Williams was recognised as one of 10 outstanding serving members of the Royal Australian Air Force (RAAF) over its 100-year history as part of centenary celebrations.



Associate Professor Robyn Clay-Williams

IN MACQUARIE UNIVERSITY'S 2021 ACADEMIC STAFF AWARDS

Dr Sidong Liu received the Early Career Researcher of the Year (STEMM) Award

Professor Braithwaite, Professor Coiera, Professor Westbrook, Associate Professor Zurynski and Professor Georgiou received the Excellence in Research Five Future-Shaping Research Priorities: Healthy People Award for the PCHSS.

IN OTHER MACQUARIE UNIVERSITY AWARDS

Ms Eliza Harrison was awarded the Executive Dean's Commendation for Academic Excellence in Year 2 Master of Research.

Dr Louise Ellis was awarded the Spirit of EnCouRage Award from the Faculty of Medicine, Health and Human Sciences.

IN NEW FELLOWSHIPS

Professor Magrabi was elected Fellow of the International Academy of Health Sciences Informatics.

Associate Professor Mitchell was elected Fellow of the Human Factors and Ergonomics Society of Australia.

Dr Reidar Lystad was elected Fellow of the Australian Sports Medicine Federation.

Associate Professor Harrison was awarded a Cancer Institute NSW career development Fellowship.

IN NEW APPOINTMENTS

Professor Rappport was appointed to the Wellcome Trust's PhD Programmes for Health Professionals Committee.

Professor Berkovsky was elected by the Association for Computing Machinery (ACM) International Conference on Intelligent User Interfaces (IUI), as Program Committee Chair for Sydney 2023.

IN PRIZES

Professor Braithwaite, Dr Yvonne Tran, Dr Ellis and Professor Westbrook won the Peter Reizenstein Award, Best Paper Published in the *International Journal for Quality in Health Care* for Braithwaite J, Tran Y, Ellis LA, Westbrook J. The 40 health systems, COVID-19 (4OHS, C-19) study. *International Journal for Quality in Health Care*. 2021;33(1). mzaa113.

Dr David Lyell, Professor Coiera, Jessica Chen, Parina Shah, and Professor Magrabi were awarded Editor's Choice for Lyell D, Coiera E, Chen J, Shah P, Magrabi F. How machine learning is embedded to support clinician decision making: an analysis of FDA-approved medical devices. *BMJ Health & Care Informatics*. 2021;28.

PhD candidate Saba Akbar was awarded Best Student Paper at the Nursing Informatics International

Congress for Akbar S, Lyell D, Magrabi F. How well do computerised decision support systems cover nursing standards of practice? A literature review.

Dr Mirela Prgomet, Dr Raban, and Professor Westbrook won Best Paper at the Context Sensitive Health Informatics Virtual Conference for “Impact of electronic medication management on the physical location of work in a paediatric setting.”

Dr Joyce Siette and Ms Laura Dodds were awarded in the Research category of the 2021 Future of Ageing Awards for the Brain Bootcamp project.

Dr Raban, Dr Nguyen, Associate Professor Li, and Professor Westbrook won the Elaine Graham Robertson Award for Best Oral Presentation at the International Australasian College for Infection Prevention and Control Conference for “Reducing antibiotic prescribing using nudges: a systematic review of interventions in primary care.”

Dr Janet Long, Dr Sarkies, Dr Emilie Frances-Auton, H M Nguyen, and Professor Braithwaite won Best Presentation Oral for Concurrent Session at the Implementation Science Health Conference Australia 2021 for “A realist synthesis of implementation strategies for large-scale hospital interventions”.

Dr Stephanie Best, Dr Long and Professor Braithwaite won Best Oral Presentation at the Implementation Science Health Conference for Implementation Science and IT Methodologies: Harnessing the potential of process mapping in implementation science research: clinical genomics in Australia.

IN COMPETITIONS

Dr Chi Yhun Lo is the 2021 Science in Public, Fresh Scientist for New South Wales and was a finalist in the Engagement Australia Excellence in Community Engagement award.

Dr Elizabeth Austin was a finalist in the National Falling Walls Lab Australia, Australian Academy of Science.

Conferences and Symposia

With more than twenty thousand views of the AIHI Webinar with Professor Lesley Hughes on climate change and human health, 2021 was another successful year for AIHI's public information forums.

AIHI is invigorated by the sharing of robust ideas, new research, and calls to action that stimulate debate and contribute to improving the health system in Australia and internationally. The AIHI Webinar Series attracted an international audience for seven hugely popular presentations by highly respected researchers and clinicians. Recordings of the webinars are available on the AIHI YouTube channel. [▶](#)



Dr Jason Alderman, Chief Patient Safety Officer, Associate Chief Quality Officer, and Executive Director of Patient Safety Research at Columbia University Irving Medical Center and New York-Presbyterian Hospital.



Professor Siri Wiig, Centre Director at SHARE – Centre for Resilience in Healthcare, at the University of Stavanger, Norway, and Honorary Professor at the Australian Institute of Health Innovation.



Associate Professor Fiona Shand, Associate Professor at the Black Dog Institute and the NHMRC Centre for Research Excellence in Suicide Prevention.



Professor Kathy Eagar, Professor of Health Services Research, Director of the Australian Health Services Research Institute and Executive Director of the Australian Palliative Care Outcomes Collaboration.



Professor Lesley Hughes, Distinguished Professor of Biology and Pro Vice-Chancellor (Research Integrity & Development) at Macquarie University. Professor Hughes is a former Lead Author in the United Nations Intergovernmental Panel on Climate Change's (IPCC) 4th and 5th Assessment Report.

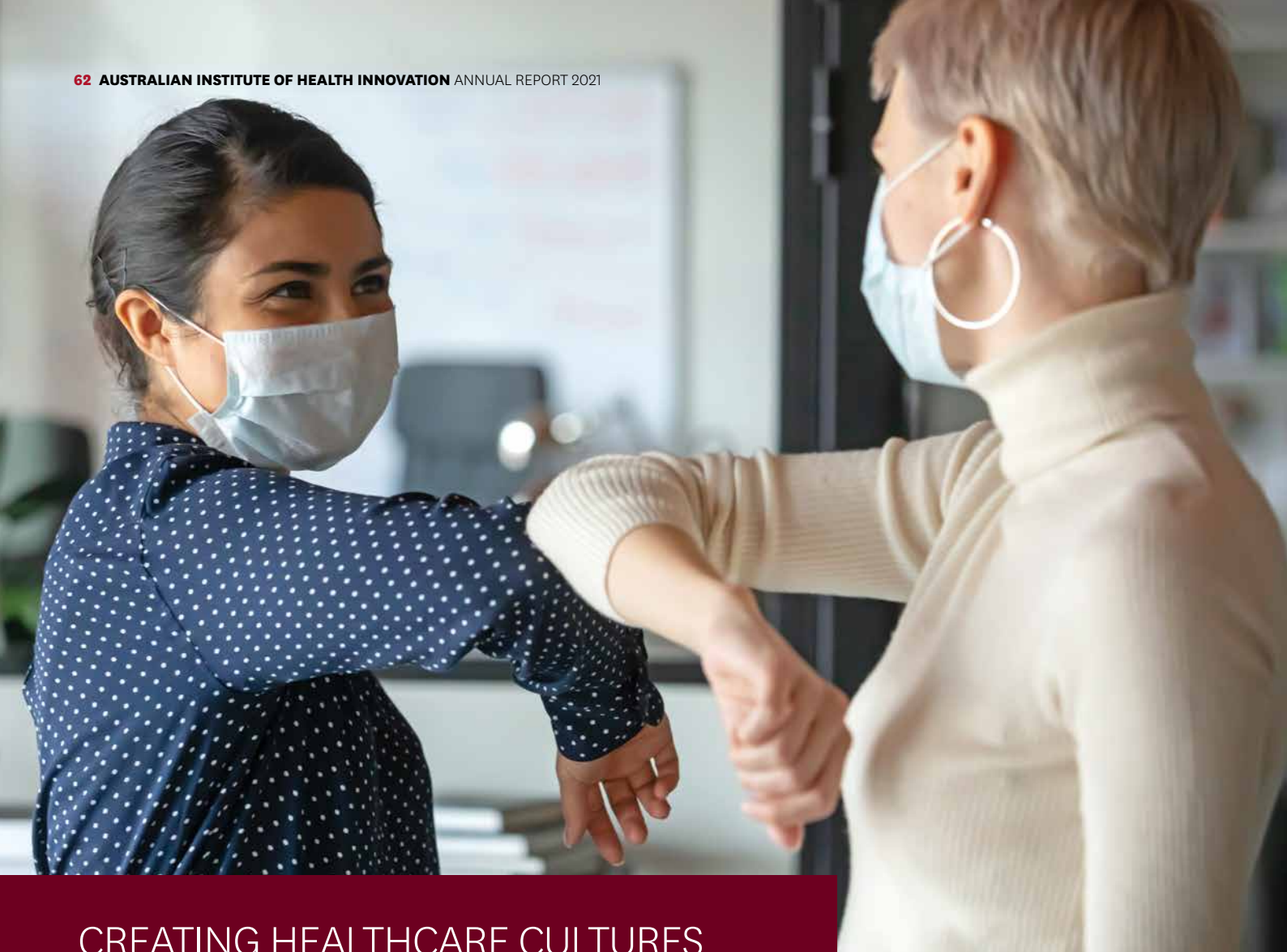


Dr Ishani Ganguli, Assistant Professor of Medicine and primary care physician at Harvard Medical School and Brigham and Women's Hospital.



Professor Harriet Hiscock, paediatrician and NHMRC Practitioner Fellow based at the Murdoch Children's Research Institute and The Royal Children's Hospital.





CREATING HEALTHCARE CULTURES OF SAFETY AND RESPECT

Clinicians, managers, support staff and policy makers came together in a virtual conference setting with leading international research figures to discuss solutions to the endemic issue of unprofessional behaviour in healthcare. The conference, titled 'Creating healthcare cultures of safety and respect', was held in association with AIHI, St Vincent's Health Australia, the Royal Australasian College of Surgeons, and the Royal Australasian College of Medical Administrators.

Keynote speakers included:

PROFESSOR WESTBROOK
AIHI, Macquarie University

An Australian healthcare system perspective – evidence of the scale and the impact.

PROFESSOR RUSSELL MANNION
University of Birmingham UK

A UK perspective: evidence of scale and the National Guardian Freedom to Speak Up program.

DR GERALD HICKSON MD
Vanderbilt University Medical Centre US

Pursuing professionalism – addressing behaviours that undermine a culture of safety and respect.

Our publications

1 JANUARY TO 31 DECEMBER 2021 ↗

1

Edited book

22

Book chapters

14

Book chapters – conference

245

Peer reviewed journal articles

9

Letters to the editor and editorials

5

Full conference papers

59

Conference abstracts/posters

EDITED BOOK

1. Braithwaite J, Hollnagel E, Hunte G, editors. Resilient health care: volume 6: muddling through with purpose. United States: CRC Press, Taylor & Francis Group; 2021.
5. Churruca K, Ellis LA, Long JC, Braithwaite J. “What on earth is going on and what should I do now?”: sensemaking as a qualitative process. In: Rapport F, Braithwaite J, editors. Transforming healthcare with qualitative research. Routledge; 2021. p. 157–66. (Routledge Studies in Health and Social Welfare).

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2. Best S, Long JC, McPherson E, Taylor N, Braithwaite J. Deep inside the genomics revolution: on the frontlines of care. In: Rapport F, Braithwaite J, editors. Transforming healthcare with qualitative research. Routledge; 2021. p. 167–78. (Routledge Studies in Health and Social Welfare).
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AIHI grants awarded or under management in 2022

NHMRC GRANTS

Title	Scheme	Investigators	Total Awarded
NHMRC Partnership Centre in Health Systems Sustainability (including partner funds: BUPA, NSW Health, WA Health)	Partnership Centre Grant	Braithwaite J Coiera E Westbrook J Glasziou P Karnon J Scott A Buchbinder R	\$8,750,000
Delivering safe and effective medication management technology now and for the future	Investigator Grant	Westbrook J	\$2,500,000
Centre of Research Excellence in Digital Health	CRE	Coiera E Glasziou P Runciman W Hansen D Liaw S Magrabi F Sintchenko V Verspoor K Gallego Luxan B Lau A	\$2,498,649
Centre of Research Excellence in Implementation Science in Oncology (CRE-ISO)	CRE	Braithwaite J Ward R Curren D Delaney G Kefford R Olver I Karnon J Liau W Westbrook J	\$2,495,783
A dashboard of predictive analytics and decision support to drive care quality and person-centred outcomes in aged care (including partner funds: Anglicare, Sydney North PHN, Deeble Institute for Health Policy Research, Northern Sydney LHD, Aged Care Quality and Safety)	Partnership Project	Westbrook J Georgiou A Lord S Gray L Day R Ratcliffe J Baysari M Braithwaite J	\$1,836,150

Title	Scheme	Investigators	Total Awarded
A National Aged Care Medication Roundtable – Translating aged care data into action to improve quality of care through collaboration and co-design (including partner funds: BaptistCare, Scalabrini, Anglicare, ACSQHC)	Partnership Project	Westbrook J Gray L Bucknall T Etherton-Beer C Newell B Raban M Caughey G Beattie E Makeham M Braithwaite J	\$1,819,499
Medical Research Future Fund (MRFF) Keeping Australians Out of Hospital	Medical Research Future Fund	Braithwaite J Westbrook J Day R Levesque J Mitchell R Rapport F Cutler H Tran Y Clay-Williams R	\$1,505,612
Bringing artificial intelligence into the real world of healthcare – the implementation challenge	Investigator Grant	Coiera E	\$1,500,000
Establishing a digital health foundation for outcomes-based diagnostic excellence, safety and value (including partner funds: Abbott Diagnostics, South Eastern Sydney LHD, NSW Health Pathology, ACSQHC)	Partnership Project	Georgiou A Center J Westbrook J Rawlinson W Curtis K Post J Hillman K Amin J Endre Z	\$1,377,501
Designing and implementing a real-world learning healthcare system: operational knowledge, data and practice for clinical microsystems of the 21st Century	Investigator Grant	Braithwaite J	\$1,350,000
CareTrack Aged: appropriate care delivered to Australian living in residential aged care	Project Grant	Braithwaite J Cameron I Kitson A Reed R Georgiou A Gray L	\$1,157,722

Title	Scheme	Investigators	Total Awarded
Delivering safe and effective test result communication, management and follow-up (including partner funds: South Eastern Area Laboratory Services, ACSQHC)	Partnership Project	Georgiou A Westbrook J Greenfield D Horvath A Wakefield D Li L Hillman K	\$1,133,359
Creating a culture of safety and respect: a controlled, mixed methods study of the effectiveness of a behavioural accountability intervention to reduce unprofessional behaviours (including partner funds: St Vincent's Health Australia).	Partnership Project	Westbrook J Braithwaite J Day R Middleton S Scott D Rapport F Mitchell R Baysari M Li L Taylor N	\$1,225,978
Delivering safe and effective care for children in hospital with eHealth systems (including partner funds: Sydney Children's Hospitals Network, eHealth NSW, NSW Office of Kids and Families)	Partnership Project	Westbrook J Georgiou A Day R O'Brien T Karnon J Dalla-Pozza L Cowell C Li L Baysari M Ambler G	\$1,082,805
Creating safe, effective systems of care: the translational challenge	Partnership Centre Grant	Coiera E	\$713,123
Building a culture of safety in Australian residential aged care facilities	Investigator Grant	Churruca K	\$650,740
Implementing and scaling an evidence-informed model for hip fracture management: harnessing implementation science for complex adaptive healthcare systems	Investigator Grant	Sarkies M	\$617,583
Optimising eHealth systems to improve medication safety and patient outcomes	Early Career Fellowship	Raban M	\$347,952
Enhancing safety and care quality for culturally and linguistically diverse cancer consumers: A consumer engagement approach	Ideas Grant	Harrison R Walton M Manias E Wilson C Seale H Girgis A Smith AB Chin M	\$292,179
When sporadic disease is not sporadic – exploiting cryptic relatedness to unravel MND genetics	Ideas Grant	Williams K Henden L B erkovsky S Blair I Iacoangeli A Smith B Dobson-Stone C Kwok J Halliday G Nicholson G	\$120,222

Title	Scheme	Investigators	Total Awarded
CRE in Interactive Digital Technology to Transform Australia's Chronic Disease Outcomes	CRE	Oldenburg B Maddison R Kostakos V Boyle D Borland R Lau A Furler J Scuffham P Abraham C Taylor C Meulenbroeks I	\$115,000
The impact of COVID-19 and associated health policies on care quality and health outcomes in Australian residential aged care facilities	PhD Scholarship	Sorrell T Sintchenko V Cheng A Gilbert G Holmes E	\$101,542
Protecting the public from emerging infectious diseases	CRE	Howden B Smith D Coiera E Iredell J Jones C	\$87,004
Preventing chronic disease in patients with low health literacy using e-health and teamwork in primary health care	Project Grant	Harris M Stocks N Nutbeam D Zwar N Karnon J Denney-Wilson E Noakes M Liaw S Lau A	\$79,564
Total Funding for this report			\$33,357,967
Number of grants on this report			39

NON-NHMRC GRANTS

Title	Scheme	Investigators	Total Awarded
COVID-19 – utilising near real-time electronic General Practice data to establish effective care and best-practice policy	DHCRC	Georgiou A Wabe N Hardie R Imai C McLeod A Pearce C	\$1,010,000
Australian Type 1 Diabetes Clinical Research Network “Improving clinical outcomes in young people with T1D – getting evidence and treatments into practice	Juvenile Diabetes Research Foundation	Jones T Davis E Bloom D Braithwaite J Zurynski Y	\$1,002,532
APRICA – Accelerated Program of translational research in primary liver cancer	Cancer Institute NSW	George J McCaughan G Reddel R R Chant K Clarke SJ Liauw W Nagrial AM Agar M Zekry A Zurynski Y	\$628,000
Co-designing quality end of life care to culturally and linguistically diverse consumers in cancer services	Cancer Institute NSW	Harrison R	\$599,755
Person, tumor and system-focused knowledge to drive better outcomes in melanoma	University of Sydney	Braithwaite J Rapport F	\$589,707
AUSMURI: Cohesive and Robust Human – Bot Cybersecurity Teams	Department of Industry, Innovation and Science	Rubenstein B Kaafar D Berkovsky S Brown S Eidels A Kostakos V Murray T Ohrimenko O	\$570,000
Murdoch Children’s Research Institute Placement Agreement	Murdoch Children’s Research Institute	Braithwaite J	\$525,000
Towards an innovative, far-reaching research-based solution for the local community	Health Infrastructure	Clay-Williams R Hibbert P Arnolda G Rapport F Mitchell R Zurynski Y Long J Braithwaite J	\$519,374
Paediatric Precision Oncology Implementation Science	Children’s Cancer Institute Australia	Rapport F Braithwaite J Long J O’Brien T Tyrrell V	\$390,640
Redesigning patient experience in health service navigation using digital technology	NSW Health	Lau A	\$360,541

Title	Scheme	Investigators	Total Awarded
PSRACS participation in the CareTrack Aged research, a NHMRC-funded Project Grant	Victoria Department of Health and Human Services	Braithwaite J Hibbert P Wiles L	\$357,603
Risk assessment project proposal	Medical Council of NSW	Clay-Williams R Arnolda G Tran Y Lystad R Mitchell R Hibbert P Braithwaite J	\$353,280
RarEST Rare disease Awareness, Education Support and Training (RarEST)	The University of New South Wales	Zurynski Y	\$290,349
A novel neuro-cardiac self-regulation therapy to improve autonomic and neural function after SCI: Clinical trials and translation to implementation	NSW Health	Craig A Middleton J Gopinath B Cameron I Davis G Tran Y Krassioukov A Braithwaite J Mitchell R Gustin S	\$273,622
Mackenzie's Mission	Australian Genomics Health Alliance	Braithwaite J Long J Best S	\$250,000
Health System Sustainability	Independent Hospital Pricing Authority	Braithwaite J	\$240,103
Active Implementation of Australian Consensus Guidelines for the effective delivery of ethical services to patients with Mitochondrial Disorders	Mitochondrial Foundation Board	Christodoulou J Braithwaite J Long J Best S	\$238,685
LifeSpan: An implementation evaluation	The Black Dog Institute	Zurynski Y Ellis L Long J	\$227,966
RuralKids GPS delivering equitable care to children in rural NSW	Sydney Children's Hospitals Network	Zurynski Y	\$200,632
NHMRC Investigator Grant DVC(R) Co-funding	Macquarie University	Westbrook J	\$200,000
Independent file review to monitor the minor injury definition and threshold in the new CTP scheme	State Insurance Regulatory Authority	Mitchell R Braithwaite J Hibbert P	\$173,997
Investigating the relationship between out-of-pocket costs, healthcare quality, experience and outcomes	Medibank Private Limited	Harrison R Mitchell R Braithwaite J Mumford V Hibbert P Westbrook J	\$173,000
Use it or Lose it? Maximising your brain health	NSW Department of Planning, Industry and Environment	Siette J	\$172,280

Title	Scheme	Investigators	Total Awarded
Computerised decision support to improve efficiency and outcomes of massive blood transfusion	Australian and New Zealand College of Anaesthetists	Sanderson B	\$160,000
Specialised Asset Management Change Methodology	Health Infrastructure NSW	Harrison R Clay-Williams R Mitchell R Churruca K Chauhan A Westbrook J Braithwaite J	\$149,850
Data mapping in hospital databases	Evidentli	Berkovsky S Coiera E	\$115,000
Developing Privacy Enhancing COVID-19 Symptom Classification Tool	Macquarie University	Uddin Sheikh N	\$105,000
Usability and effectiveness of the NICU/PICU version of the electronic Record for Intensive Care (eRIC)	eHealth NSW/Kids Critical Cancer Research	Raban M Westbrook J Wiggins M Harrison R Clay-Williams R	\$98,230
Variation in care for pancreaticoduodenectomy in NSW – An outcome and cost analysis	Cancer Institute NSW	Li L	\$96,817
NHMRC Investigator DVCR Co Funding	DVCR Macquaire University	Braithwaite J	\$90,000
Sydney North Health Network Digital Test Beds Evaluation	Sydney North Health Network	Georgiou A Jorgensen M Siette J Nguyen A	\$89,991
Co-designing patient engagement strategies to enhance safety in cancer services for culturally and linguistically diverse (CALD) patients	Cancer Australia	Harrison R	\$82,667
Impact of chronic illness and injury on school performance	Macquarie University	Mitchell R	\$77,639
Clinician Experience Core Measures	NSW Ministry of Health	Harrison R Mitchell R Walpola R Ellis L	\$75,000
Developing an implementation strategy for enhancing the detection and management of familial hypertension in Australia	Heart Foundation	Sarkies M Watts G Sullivan D Braithwaite J	\$74,924
Delivery of training programs on systems	Department of Social Services	Braithwaite J Clay-Williams R Mitchell R	\$70,000
Assessing the clinical benefits of TICl using mixed methods	Cochlear Ltd	Rapport F Clay-Williams R	\$66,890
Review and updating of the six Medication Safety Evidence Briefings	ACSQHC	Raban M Gates P McMullan R Westbrook J	\$65,100
Sepsis Analysis and Epidemiological Interpretation	ACSQHC	Li L	\$63,049

Title	Scheme	Investigators	Total Awarded
Review of the Southern Adelaide Local Health Network Continuous Improvement Program	Southern Adelaide Local Health Network	Hibbert P Braithwaite J Gardner C Wiles L Clay-Williams R	\$62,256
Research on approaches for clinical governance of consumer digital health	Healthdirect	Magrabi F Coiera E	\$54,657
Living Stroke Guidelines Evaluation	Stroke Foundation	Wiles L Hibbert P Zurynski Y Smith KL Arnolda G	\$54,511
Macquarie MINDS: Monitoring of injury and psychosocial health outcomes, career trajectories and continuing education, LiveD experiences and Social connectedness	Macquarie University	Lystad R Peters L Johnstone M Ellis L	\$49,994
Mitochondrial Disease Triage Tool	Kolling Institute	Berkovsky S	\$49,409
Optimising eHealth systems to improve medication safety and patient outcomes	Macquarie University	Raban M	\$48,858
iConnect: Capturing social interactions using wearable technology in residential aged care	Macquarie University	Siette J	\$43,875
LMP: Evidence Check: Lifestyle modification programs	Sax Institute	Zurynski Y Smith K Siette J B Nic Giolla Easpaig	\$40,000
List of validated patient reported outcome measures	ACSQHC	Ellis L Churruca K Pomare C	\$36,243
Supporting materials for patient safety culture measurement: Parts A and B	ACSQHC	Ellis L Tran Y Pomare C	\$35,800
Evaluation Plan: MQ Health HeartConnect Service	MQ Health	Zurynski Y Wilcock S Naliliah C Lopez F Kmet W	\$35,000
Evaluation of Easycare Assisted-Living Technology	Easycare Technology Pty Ltd	Lau A	\$35,000
Computerised decision support to improve efficiency and outcomes of massive blood transfusion	National Blood Authority	Sanderson B	\$30,000
Exploring the impact of child and placement characteristics, carer resources and perceptions, and life stressors on caregiving	Department of Communities and Justice	Mitchell R Ryder T Zurynski Y	\$30,000

Title	Scheme	Investigators	Total Awarded
Determining the role and responsibilities of the Australian Epilepsy Nurses in the management of epilepsy across primary and community care	University of Sydney	Rapport F Hutchinson K Herkes G Bleasel A Nikpour A Wong C Ireland C Bartley M Braithwaite J	\$30,000
The Collaboration to Improve Clinical Practice and Research Outcomes in Melanoma and Other Skin Cancers	Macquarie University	Braithwaite J Rapport F Wilkinson D Mann G Cust A Smith A	\$30,000
Evaluation of a peer support program at the Townsville Hospital	Townsville Hospital and Health Service	Clay-Williams R Austin E Ellis L Blakely B Lane P	\$26,343
Hospital Funding Models	Western Sydney LHD	Clay-Williams R Zurynski Y Long J Braithwaite J	\$25,000
An evaluation of the literature on assessing safety and quality culture in an organisation	ACSQHC	Hogden A Ellis L Churruca K Bierbaum M	\$23,095
Bringing artificial intelligence into the real world of healthcare – the implementation challenge	Macquarie University	Coiera E	\$20,000
Monitoring the safety and quality of artificial intelligence (AI) systems in healthcare	Macquarie University	Magrabi F	\$20,000
MQ Safety Net (MQSN) Scheme Peter Hibbert	Macquarie University	Hibbert P	\$20,000
Improving long-term health outcomes for Australians with traumatic brain injury	Macquarie University	Lystad R	\$19,916
MQSN Mind the gap – a computational model to understand bed block in public hospitals	Macquarie University	Clay-Williams R	\$19,800
Special Donation Gastrointestinal Research	Macquarie University	Auton E	\$19,571
Case studies on patient reported outcome measures	ACSQHC	Ellis L Churruca K Mahmoud Z	\$17,352
Evaluating the value, role and responsibilities of the metastatic breast care nurse	McGrath Foundation	Smith A Rapport F Braithwaite J Lewis S Mahony J Townsend J	\$16,957

Title	Scheme	Investigators	Total Awarded
Social Network Analysis of TCRN 2020	TCRN	Long J Pomare C	\$14,230
The Collaboration to Improve Clinical Practice and Research Outcomes in Melanoma and Other Skin Cancers'	National Skin Cancer Clinics	Braithwaite J Rapport F Wilkinson D Mann G Cust A Smith A	\$12,500
The Collaboration to Improve Clinical Practice and Research Outcomes in Melanoma and Other Skin Cancers	Skin Cancer Institute	Braithwaite J Rapport F Wilkinson D Mann G Cust A Smith A	\$12,500
Productive and non-productive cough classification using machine learning	Macquarie University	Sharan R	\$12,241
Evaluating the value, role and responsibilities of the metastatic breast care nurse	Macquarie University	Smith A Rapport F Braithwaite J Lewis S Mahony J Townsend J	\$10,850
Strategies to address unprofessional behaviours among staff in acute healthcare settings: a realist review	National Institute for Health Research (NIHR)	Maben J Mannion R Jones A Westbrook J Pearson M Abrams R	\$10,787
Evidence review of tools to measure quality of life, consumer satisfaction and consumer experience across residential and in-home aged care. (AIHI managed component)	Department of Health (Commonwealth)	Ratcliffe J Khadka J Gordon S Caughey G Westbrook J	\$9,200
Functional Resonance Analysis Method (FRAM)	Hunter New England Health	Clay-Williams R Braithwaite J	\$6,256
National injury prevention strategy – Literature Review	NSW Families and Child Services	Hunter K Ivers R Clapham K Curtis K Keay L Vallmuur K Brown M Mitchell R Scott D Cullent P	\$6,000
Translating genomics into routine care using implementation science	Macquarie University Postgraduate Research Fund (PGRF)	Gul H	\$5,500

Title	Scheme	Investigators	Total Awarded
Absent voices: Feasibility study exploring whole family experience in living with parental refractory epilepsy to inform service development	University of Technology Sydney	Hutchinson K Rapport F Braithwaite J Hofstaetter L Todd L Herkes G Bleasel A Wong C Nikpour A	\$5,000
Automation in nursing decision support systems: evaluating effects on risk identification and decision making	Macquarie University	Akbar S	\$5,000
MQ ECR of the Year Award- STEMM	Macquarie University	Liu S	\$5,000
MQ Postgraduate Research Fund	Macquarie University	Pomare C	\$4,915
MQ ECR Enabling Scheme_Sharan	Macquarie University	Sharan R	\$2,500
MQ ECR Enabling Scheme_Imai	Macquarie University	Imai C	\$2,160
Commercial bicycling injury patters: The human cost of the delivery gig economy	Macquarie University	Sarkies M	\$2,156
MQ ECR Enabling Scheme_Hardie	Macquarie University	Hardie R	\$2,150
Doctors' views on performing intimate examinations in Australia	Macquarie University	Auton E	\$1,716
Total Funding for this report			\$11,851,520
Number of grants on this report			85







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RISING STAR
Dr Reidar Lystad
2019

Dr Reidar Lystad

PHOTOS: Adam Scarf, Chris Stacey, Joanne Stephan, Jesse Taylor and Paul Wright

The Australian Institute of Health Innovation acknowledges the traditional custodians of the country on which we work and live and recognise that their cultures and customs have nurtured and continue to nurture this land. We pay our respects to Elders past, present and emerging.



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