

# **GERI 10th Anniversary Research Symposium**

Virtual Exhibition: A Decade of Progress in Healthy Ageing







# INTRODUCTION

In 2011 the Ministry of Health conceived of GERI as a national entity with the goal of developing, coordinating and implementing initiatives to strengthen geriatric education and research.

GERI commenced its work in 2015 with the aim of improving the lives of older people in Singapore through geriatric education, collaborative research and service planning in the health services and clinical aspects of

Over the past decade, GERI has embarked on a remarkable journey of discovery and innovation. This exhibition commemorates GERI's significant milestones and research achievements that showcases its unwavering commitment to excellence.

# **GERI'S TRANSLATIONAL THEMES**



#### **Populational Themes**

- MOH's 3 Beyonds:
- Hospital to Community
- Quality to Value
- Healthcare to Health

To bridge the gap between research, policy and practice, the Institute's initiatives were centered around four key programmes:

- Geriatric Education
- Health Services & Policy Research, including Seniors Care Delivery and Health Outcomes
- Frailty Identification, Prevention and Management
- . Clinical Geriatrics & End of Life

Collectively these programmes addressed different aspects of MOH's priorities to move beyond: Hospital to Community, Quality to Value, and Healthcare to Health.

The dedication, vision and innovation spirit of the pioneer teams continue to inspire GERI

# **GERI'S PIONEER TEAMS: LEADING OUR KEY PROGRAMMES**



#### **Geriatric Education** Programme Lead: Associate

Professor James Low

Aim: Our vision is to be at the forefront of education research and training in the care of older people in Singapore and the region. The aim is to enhance the capacity of healthcare professionals working with the older population to provide quality care. This would be achieved through research that informs the development and translation of effective training methods to address the evolving healthcare needs of the older person.



From left to right: Vivienne Le, Dr Yu Chou Chuen, A/Prof James Alvin Low, Emily Koh, Queenie Ng



Front Row (From left to right): Rachel Li, Isabelle Lim, Dr Wong Chek Hooi, Dr Tan Pey June, Wong Lok Hang, XieBing

# Frailty Identification, Prevention &

Programme Leads: Associate Professor Wee Shiou Liang and Associate Professor Philip Yap

Aim: To maximise the level of functional independence among elderly, it is important to understand the determinants of frailty in order to innovate solutions to prevent and manage it.



# **Health Services & Policy Research Programme**

Programme Lead: Dr Wong Chek Hooi

Aim: With the increased eldercare services in Singapore, there is a need to assess and evaluate current practices to advance the state of knowledge in healthcare for the ageing population.

#### **Senior Care Delivery in Community Programme** Programme Lead: Dr Wong Chek Hooi

Aim: Coupled with an ageing population, an increase in life expectancy puts pressure on public healthcare facilities. It is thus important to integrate the management of healthcare into the community.



From left to right: A/Prof Ding Yew Yoong, Penny Lun

#### Clinical Geriatrics and End of Life

Programme Lead: Associate Professor Ding Yew Yoong

Aim: With our ageing population, there is an increasing need to address age-related conditions, multimorbidity, polypharmacy, rehospitalization, advanced illness and end life care, as well as caregiving. Thus, in collaboration with partners in our healthcare system and academic institutions, we aim to conduct research that impact practice in clinical care of older adults.



Standing (From left to right): Grace Tan, Liu Xiao, Khalid Abdul Jabbar, Amber Lim, Lynette Ha, Ivana Chan, Charlene Lau, Dr Ong Siew Pei, Robin Choo Sitting (From left to right): Sean Nicholas, Daniella Ng, Mary Ng, Yeo Pei Shi, A/Prof Wee Shiou Liang, Benedict Pang, Jean Seah, Kate Ying



# **GERI THROUGH THE YEARS**

## Inaugural GERI Advisory Committee (2016)



Sitting (from left to right): Dr Quek Peng Kiang, Prof Chee Yam Cheng (Chair), Prof Philip Choo, Mr Tow Heng Tan, Prof Pang Weng Sun (Executive Director)

Senior Management. Standing (from left to right): Dr Willie Koh, Dr Wong Chek Hooi (Deputy Executive

## Asia Pacific Geriatric Conference (APGC) (10 - 13 Aug 2016)



GERI was the lead sponsor of the 2016 APGC which was graced by then Health Minister Mr Gan Kim Yong and Senior Minister of State, Ministry of Health, Dr Amy Khor.

## **GERI Teams Up with Nanyang Technological** University (11 Nov 2017)



2017

GERI signed a Memorandum of Understanding with the Ageing Research Institute for Society for Education (ARISE) at the Nanyang Technological University which paved

the way for GERI and ARISE to tap into each institute's multi-disciplinary expertise and embark on key areas of joint research to help Singapore better manage the demands of being a rapidly ageing society.

## Translating the Science of Frailty in Singapore -A National Consensus Discussion (7 Apr 2018)



2018

The National Frailty Consensus Discussion brought together over 100 participants hailing from the health sector for a robust discussions. Held at Changi General Hospital, GERI co-hosted the event together with the

Chapter of Geriatricians, College of Physicians, Singapore, the Society for Geriatric Medicine, Singapore, and the Institute of Geriatrics and Active Ageing.

# 2016 **BEGINNINGS**

Director), Dr Wee Shiou Liang, Ms Kong Lai Ho.

# International Dialogue on the Provision of LTC for the Elderly between Singapore and Thailand (31 Jul 2018)



Panellists discussed ways that Singapore and Thailand could strengthen the delivery of palliative and end-of-life care in the LTC sector. Moderated by GERI's Dr Laurence Tan, the panel of international experts also

addressed questions posed by members of the audience who were leaders of nursing homes, hospices and community hospitals.

# Signing Ceremony: Collaborative Teaching Programme between Singapore & Thailand (30 Jul 2018)



GERI hosted the Deputy General Director from the Ministry of Public Health Thailand and Head of the Special Task Force for Activating Research on Long-Term Care (LTC) for

Older Persons, Chulalongkorn University for the signing ceremony of a collaborative three-year training programme aimed at improving the provision of LTC for the elderly in Southeast Asia.

# **Practical Ethics and Conversations at EOL** for Busy Clinicians (27 Apr 2018)



A team-based learning workshop with the Clinical Ethics Network + Research Ethics Support (CENTRES) aimed to empower clinicians in making better ethical decisions for

end-of-life patients. Led by Associate Professor James Low, the workshop discussed real-life cases as they explored complex ethical issues.

## Ageing Without Dementia (9 Apr 2018)



GERI's Associate Professor Ng Tze Pin shared findings from the Singapore Longitudinal Ageing Study (SLAS), and demonstrated the SLAS Mild Cognitive Impairment

(MCI)-Dementia Risk Prediction Tool during a three-hour seminar. Associate Professor Wee Shiou Liang also presented GERI's National Innovation Challenge (NIC) Project on Early Detection and Multi-Domain Intervention for Dementia.

## Mental Health in Later Life, Master of Science in Applied Gerontology Programme (2018 - 2021)



Engaged by the Nanyang Technological University to develop the Mental Health in Later Life Module of the new Master of Science in Applied Gerontology, GERI researchers

provided students an overview of the principles and practice of mental health care for older adults, current knowledge gaps and research know-how.

# **GERI-SUSS Master Collaborative Agreement** (5 Feb 2020)



GERI signed a Master Collaborative Agreement with the Singapore University of Social Sciences to collaborate on various educational and research activities.

The initiative was led by GERI's Dr Wong Chek Hooi and explored joint research and development projects of mutual interests, as well as the co-development and teaching of courses.

# **Collaborative Teaching Programme** (21 - 24 Dec 2020)



2020 marked the completion of the three-year Collaborative Teaching Programme initiated by GERI, in collaboration with GeriCare@North under Khoo Teck Puat Hospital, the

University. A total of five Train-the-Trainer Courses were conducted. Led by Dr Tew Chee Wee, the Collaborative Teaching Programme aimed at improving palliative and geriatric care skills of long-term care nurses in Thailand.

# Chasing A Moving Target: A Roundtable Discussion on COVID-19 Vaccinations in Frail Older Adults (27 Nov 2021)



together with GERI and the Society

Ministry of Public Health of Thailand and Chulalongkorn

The Chapter of Geriatricians published a Position Statement in July 2021 entitled "COVID-19 Vaccination for Frail Older Adults". As a follow-up, the Chapter

for Geriatric Medicine Singapore, organised a roundtable for knowledge exchange, as well as providing an update on the latest developments in vaccinations. This roundtable was held on 27 Nov 2021 and panellists from GERI included Ms Penny Lun and Associate Professor Ding Yew Yoong.

# **GERI THROUGH THE YEARS**

# Advance Care Planning (ACP): A Review of the Evidence in Singapore (1 Dec 2021)



Organised by GERI in collaboration with the Agency for Integrated Care, the webinar was attended by 132 participants from acute and community hospitals, nursing homes, general practitioners to

senior care centres and social and community service organisations. It aimed to help participants understand how evidence could be translated into practice to enhance the ACP Programme, specifically in areas such as the training of facilitators and community outreach.

# Healthy Ageing in the COVID-19 Era (1 Nov 2022)



Opening lecture on "Healthy Ageing in the COVID-19 Era" at the SMU Centre for Research on Successful Ageing (ROSA)'s 2nd Annual Symposium on Successful Ageing. In his presentation, GERI's

Executive Director Associate Professor Ding Yew Yoong observed that healthy ageing, as the pandemic had demonstrated, calls for targeted and holistic efforts to strengthen both intrinsic capacity and extrinsic environments key to preventing functional decline among older Singaporeans.

# Frailty Conversations: Intrinsic Capacity Matters (25 Jul 2023)



The webinar tapped into the growing policy and public health conversation on frailty and intrinsic capacity in Singapore, bringing together GERI's research findings for

timely discussion across topics such as intrinsic capacity measurement, frailty assessment, exercise interventions and

# Multi-site Evaluation of the Geriatric Services Hub (GSH) Programme: Closure Meeting (27 Jul 2023)



GERI's national evaluation study of the GSH programme culminated in a closure meeting attended by senior representatives from the Ministry of Health (MOH) Health Services Group.

Ageing Planning Office and the five participating hospital sites from across all healthcare clusters. Topics discussed included the role of the GSH within the National Frailty Strategy and how GERI's findings and recommendations could inform policy.

2021

2023

# **Practical Tips in Implementation Science:** From Theory and Evidence to Real-World Application (24 Jul 2024)



At the webinar, Dr Sharon E. Straus, Director of the Knowledge Translation Program and Unity Health Toronto's Executive Vice-President, Clinical Programs and Chief Medical Officer,

outlined five best practices for researchers to enhance the adoption of research evidence into routine care and practice. The webinar also included a Q&A session where Dr Straus engaged GERI researchers on topics such as dissemination of complex research findings to working with policymakers and implementers.

# Focus on Health Policy Research: Professor John Lavis, International Scientific Advisor, Visits GERI (29 Feb - 1 Mar 2024)



GERI welcomed Professor John N. Lavis to its offices where he shared best practices for supporting the production of timely research evidence to address policy challenges, and discussed ways

to enhance researcher-policymaker linkages. A leading authority in this domain, Professor Lavis directs Canada's McMaster Health Forum and the WHO Collaborating Centre for Evidence-Informed Policy, and has been working with GERI as its International Scientific Advisor since late 2023, providing capacity-building to its researchers involved in health policy research.

# **Duke-NUS Centre for Ageing Research and Education Experts Webinar: Frailty, Intrinsic** Capacity and Functional Ability - Linkages and Implications for Healthy Ageing in Singapore

(19 Jan 2024)



Maintaining functional ability, as well as preventing and managing frailty and declines in intrinsic capacity (one's physical and mental reserves)—these are some crucial ingredients in the recipe for living and ageing well. At the Duke-NUS Centre for Ageing Research and Education (CARE) Experts Webinar

held on 19 Jan 2024, GERI's Executive Director Associate Professor Ding Yew Yoong shared key ideas to distil wide-ranging research on this topic.

# **Dementia Care Across the Continuum:** Multi-Dimensional Peek into the Unknown (24 Nov 2023)



Given the heavy toll exacted by dementia on Singapore's healthcare system, patients and their families and society, managing this condition has

become a national priority. The webinar featured presenters and a panel of experts who shared their research findings and expertise spanning dementia identification, assessment and care of persons living with dementia.

2024

# **GERI's Research Impact Framework** Orientation (30 Jul 2024)



Understanding the significance of research impact requires looking beyond academic achievements to the tangible benefits research brings to society. Recognising the need for meaningful measures,

GERI's Research Impact Framework (RIF) was created to help researchers showcase the impact of their work. The first session to orient researchers on the RIF was held in July 2024.

# Intrinsic Capacity in Singapore's Primary Care: **IMPACTFrail to be Piloted at Five Polyclinics** (7 Jan 2025)



A collaborative research project by GERI, National University Polyclinics, National Healthcare Group Polyclinics and SingHealth Polyclinics aims to translate the National Frailty Policy into real-

world practice by piloting a new healthy ageing programme at five polyclinics. Named IMPACTFrail (Implementing the National Frailty Policy in Singapore's primary care: The Intrinsic Capacity ProMotion in PrimAry Care for The Frail Program), its study team and stakeholders gathered for a virtual kick-off meeting to mark the programme's roll-out around Mar 2025.

# A Primer on the Science of Behaviour Change (Apr 2025)



GERI researchers participated in a three-part workshop series on the science of behaviour change led by Professor Ayelet Gneezy, Visiting Professor, Behavioural

and Implementation Science Interventions, Yong Loo Lin School of Medicine, National University of Singapore. Through interactive sessions, the researchers gained valuable insights into the processes and methods essential for designing effective behaviour change interventions.

# **GERI and Duke-NUS Centre for Ageing** Research and Education (CARE) Strengthen Ageing Research (Feb, May 2025)



GERI's Research Management Committee met with CARE to share insights and explore collaboration opportunities. As members of the Ageing Research Network, both

research institutes regularly engage to advance Singapore's ageing research agenda. Through fostering partnerships and creating opportunities for dialogue, GERI continues to connect across the research ecosystem to facilitate impactful research that benefit Singapore's older adults.







# Research, Innovation and Enterprise (RIE) 2025

#### Foundational Framework

A public health framework for healthy ageing (WHO, 2015)

#### GERI's Research Frameworl

Overarching Goal:
Optimising Functional Ability

#### Research Focus

- Preventing Functional Decline
- Implementing Integrated Care

Knowledge Translation Framework

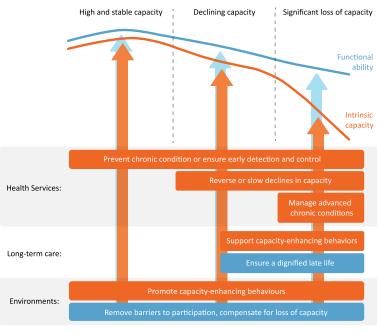
> **Ageing Policy:** Age Well SG

Health Policy and Practice: Healthier SG

# **GERI's Research Strategy**

GERI's research strategy is guided by our Foundational Framework with research foci in Preventing Functional Decline and Implementing Integrated Care. Recognising the importance of moving research into the hands of practitioners and policymakers, GERI developed our Knowledge Translation Framework. Together these form GERI's Research Framework which supports Singapore's Populational and Healthcare Policies and Practices in the T3 / T4 space such as Age Well SG.

# **GERI's Foundational Framework**



Source: World report on ageing and health, WHO (2015)

GERI's Foundational Framework was adapted from the World Health Organization (WHO)'s Public Health Framework for Healthy Ageing (World Report on Ageing and Health, 2015), which maps the general trajectories of functional ability and intrinsic capacity across diminishing health states across one's life course. This led to GERI's refined research foci in Preventing Functional Decline and implementing Integrated Care, echoing the idea of fostering functional ability of older adults at the individual level by improving and maintaining intrinsic capacity, and at the environmental level by enabling and supporting those with decline in capacity to do things that are important to them.

# **GERI's Research Focus**

#### **Preventing Functional Decline**

Supporting the functional ability of older adults at the individual level by improving or maintaining intrinsic capacity (the combination of physical and mental capacities). Research topics encompass intrinsic capacity, frailty, physical and cognitive functioning, falls and community mobility.

#### Implementing Integrated Care

Optimising supportive environments by enabling those with decline in capacity to do things that are important to them. Research topics encompass care models for those with frailty, multimorbidity, complex needs, dementia and advanced life-limiting illness; incorporating caregiving support.

# **GERI's Knowledge Translation Framework**

Through the four nodes of GERI's Knowledge Translation Framework, we disseminate evidence-based research findings to inform real-world practice and policy.



#### Implementation

Research findings may span behaviours, practices, knowledge and attitudes. To create solutions that can be implemented in practice, we identify and utilise suitable interventions from a range of strategies used in implementation research to enhance the understanding and adoption of a new idea or practice.



#### Dissemination

Through various channels, such as publications, Research and Policy Briefs, presentations and more, we share knowledge and related evidence-based interventions with healthcare practitioners, community care partners, policymakers and researchers.





#### **Knowledge Creation**

Working with our collaborators, we engage stakeholders to identify issues and conduct evidence-based research, with an emphasis on implementation research, health policy research and inter-disciplinary approaches. Our methodological expertise includes rapid reviews, programme evaluation, Delphi method and mixed methods.

### Exchange

Platforms for discourse are intentionally and thoughtfully created to engage our stakeholders on ways to improve effectiveness, sustain and scale up evidence-based approaches in practice. Knowledge users are engaged before, during and after the project. Through such research-practice-policy exchange, new research opportunities may emerge.

# A Decade of Progress in Healthy Ageing: Key Research Highlights from 2015 to 2025

Showcasing pivotal studies and innovative initiatives that have informed and contributed to the policy and practice of healthy ageing in Singapore

# Highlights of GERI's Health Policy Research



Update on Interventions to Prevent or Reduce Frailty in Community-Dwelling Older Adults: a Scoping Review and Community Translation (2018)

Frailty prevention and management has grown in interest in globally

GERI undertook an update to a previous scoping review to supplement the current knowledge on interventions to reduce frailty in community-dwelling older adults and its state of translation in real-world settings.

The study found that well-designed studies aimed at maximizing function and promoting ageing in place using multi-domain interventions are essential to further the evidence-base and community translation, which in turn has the potential to better inform comprehensive policies to address frailty prevention/ reduction through appropriate health and social programmes/ services provision and financing.

To read more –

Update on Interventions to Prevent or Reduce Frailty in Community-Dwelling Older Adults: a Scoping Review and Community Translation. Current Geriatrics Reports 8(2): 72-86. (2019)



COVID-19 Vaccination for Frail Older Adults in Singapore - Rapid Evidence Summary and Delphi Consensus Statements (2021)

Collaborator: Chapter of Geriatrician

To support Singapore's nationwide COVID-19 vaccination programme, the Chapter of Geriatricians sought to address the suitability of COVID-19 vaccination in frail older adults due to lacking evidence on the effectiveness and safety.

GERI undertook a rapid scoping review of the existing evidence, supplemented by geriatricians' consensus statements though a modified Delphi approach for consensus.

Altogether, sixteen statements which achieved consensus in the modified Delphi process were considered by the workgroup in the development of 9 final recommendations for the position statement of the Chapter of Geriatricians.

To read more -

Consensus Statement - COVID-19
Vaccinations for Frail Older Adults
Chapter of Geriatricians, College of
Physicians. Singapore (2021)



COVID-19 Vaccination for Frail Older Adults in Singapore — Rapid Evidence Summary and Delphi Consensus Statements. The Journal of Frailty & Aging 11(2): 236-241. (2022)



A Rapid Review of Brief Diagnostic Tools to Identify Possible Dementia Among Community-Dwelling Older Adults in Singapore (2023)

Collaborator: Tan Tock Seng Hospital

Identifying community-dwelling older adults with dementia is a challenging and complex process. Timely detection of dementia enables early access to dementia-specific care service: and interventions.

To support the Singapore's potential strategy formulation for dementia detection in the community, GERI undertook a rapid review of available scientific literature to identify bei screening tools that can be applied in community settings as well as health systems and proposed different tools for case-finding subject to whether informants were available or not

The findings have been presented to the MOH Dementia Policy Workgrou

To read more

Optimising dementia screening in community-dwelling older adults: A rapid review of brief diagnostic tools in Singapore. Ann Acad Med Singap 33(12): 742-753. (2024)



Brief Geriatric Assessments for Older Persons in Community Settings (2023 – 2024)

**Collaborators:** Tan Tock Seng Hospital, National University Hospital, Sengkang General Hospital

Brief geriatric assessments (BGA) may be useful as an alternative to comprehensive geriatric assessments in primary and community care settings. However, the current lack of consensus on the target population, essential domains, and implementation of BGA in community and primary are settings in Singapore remains to be addressed.

to ensure adequate contextualization and reasibility for operationalisation, GERI conducted a scoping review to synthesize available evidence, a modified two-round electronic Delphi study with clinicians for contextualisation to Singapore's clinical setting, and a range of in-depth interviews (IDIs) with relevant stakeholders to ascertain feasibility of implementing a brief geriatric sessment in the community.

The findings have been presented to the MOH Frailty Implementation Workgroup

To read more –

Application and implementation of brief geriatric assessment in primary care and community settings: a scoping review. BMC Geriatrics 25(1): 2. (2025)



# Highlights of GERI's Research in Preventing Functional Decline

# Evaluating the Implementation of Live Well, Age Well Active Ageing Programme in the Community (2024 – 2025)

Collaborators: Health Promotion Board, People's Association, Ministry of Health

The Live Well, Age Well (LWAW) Active Ageing Programme (AAP), launched in 2023 by the Healt Promotion Board and the People's Association, offers a range of initiatives aimed at empowering older adults to enhance and sustain their physical, mental, and social well-being.

Despite the programme's availability and efforts to boost participation, engagement among seniors remains inconsistent and varies across different domains.

Recognising that seniors are a diverse group with unique needs, preferences, and abilities is crucia This diversity underscores the importance of considering socioeconomic and demographic factors, along with health conditions, when designing and implementing AAPs.

GERI is currently spearheading a mixed methods evaluation of the LWAW programme with suppor from the Ministry of Health to gain a deeper understanding of the LWAW programme's effectiveness and its community implementation.

The study has successfully completed the baseline quantitative surveys and is currently in the process of finalising the three-month follow-up surveys. Meanwhile, the qualitative interviews arrangeing.

The findings of this study will contribute to the planning, design, and implementation of future iterations of active ageing programmes for older adults living in communities.

It also highlights the essential need for ongoing monitoring and evaluation to ensure these programmes remain sustainable and can adopt to evolving demographic trends and requirements

Evaluating the Implementation of a Nationwide Active Ageing Programme for Community-Dwelling Older Adults (2023 – 2025)

Collaborator: Health Promotion Board

Health Promotion Board previously implemented a nationwide active ageing programme for community-dwelling older adults, consisting the 'Move It Feel Strong' (MIFS) exercise programme and functional assessments (FA) with scale of about 4,800 sessions per month.

Seniors with signs of frailty are identified and referred to more targeted interventions such as Health Promotion Board's community pre-frailty exercise programmes or further assessments in the clinical strings.

GERI undertook a mixed methods implementation evaluation of the nationwide active ageing programme across 40 community sites in Singapore and to study the implementation of referral pathways for identified pre-frail, frail older adults to more targeted interventions within the Regional ealth System to optimize feasibility and scalability.

The findings of this study will provide insights into recommending behaviour change interventions for older adults and allow Health Promotion Board to continue enhancing implementation approaches for MIFSY FA to support sustainability and scalability.

To read more

Effects of Exercise Interventions on Physical Performance and Activities of Daily Living in Oldest-Old and Frail Older Adults: A Review of the Literature. American Journal of Physical Medicine & Rehabilitation 102(10). (2023)



# Intrinsic Capacity in the Context of Population Health for Older Adults in Singapore (2021 – 2024)

**Collaborator:** Singapore Management University

Intrinsic capacity (IC) captures the physical and mental capacities of an individual and represents the resources a person can tap into during his/her life, and there is currently a knowledge gap on now declines in IC affect older Singaporeans as they transition through the ageing process.

Together, SMU Centre for Research on Successful Ageing (ROSA) and GERI studied IC of older adults in the Singapore Life Panel (SLP), to gain a better understanding of how individuals can flourish as they age.

Information obtained from the panel survey will help Singaporeans and policymakers alike bette understand how to ensure well-being in old age, providing rich insights into how Singaporeans fare in their old age.

To read more

Exploring the relationship between intrinsic capacity and social participation in healthy ageing: Evidence from Singapore.

The Journal of nutrition, health and aging 29(5):100524. (2025)





# Highlights of GERI's Research in Preventing Functional Decline

## Singapore Longitudinal Ageing Studies (2016 - 2024)

Collaborators: Yong Loo Lin School Of Medicine, National University of Singapore



**Social Frailty and Functional Disability: Findings From the Singapore Longitudinal** Ageing Studies. J Am Med Dir Assoc 18(7):

A bio-psycho-social approach for frailty amongst Singaporean Chinese community-dwelling older adults – evidence from the Singapore Longitudinal



and mortality. PLoS One



National Falls Awareness and Prevention Programme & Evaluation and Development of Falls Prevention Evaluation and Development for Older Adults in the Community (FrEDA) (2017 – 2022)

Collaborators: National University of Singapore, Khoo Teck Puat Hospital, Woodlands Health, Tan Tock Seng

An inaugural roundtable on falls, gait and mobility was organised together with Duke-NUS CARE in Sep 2019 to develop a



**Sex Differences** in Perceptions toward Falls among Older Adults Living in the Community in Singapore. 32(10): 1355-1362. (2020)



Pragmatic multicentre stepped-wedge cluster randomised trial to investigate the effectiveness of community-based falls prevention programme for older adults with falls risk in Singapore: a protocol paper. BMJ Open 13(6): e072029. (2023)



# **Lifespace Mobility and Wayfinding Experience** in Age-Friendly Neighbourhoods (2017 - 2019)

Health, Khoo Teck Puat Hospital, Agency for Integrated Care, CPG Consultants, Lekker Architects Pte Ltd, PODesign Pte Ltd, Building

Design to understand the daily activity engagement patterns among older adults, their experiences and needs in terms of design in their neighbourhoods and the connections between their health (physical,

A guide entitled "Six Principles of Dementia-Friendly Neighbourhood" formulated by Lee Kuan Yew Centre for Innovative Cities at Singapore University of Technology & Design, is currently in use with agencies such as Dementiahub.sg, Agency for

MacPherson Town Councils to redesign sheltered connections for easier navigation



The development and validation of a prototype mobility tracker for assessing the life space mobility and activity participation of older adults. BMC Geriatrics 20(1): 251. (2020)



Shaping age-friendly



**Dementia Friendly** Neighbourhood Design Guide Centre for

# Highlights of GERI's Research in Implementing Integrated Care

Optimising INtrinsic Capacity for Functional INdependence and to Impede FrailTY in Older Adults: Adaptation of the World Health Organization Integrated Care for Older People (WHO ICOPE) for Healthy Ageing in Singapore (INFINITY-ICOPE) (2023 – 2028)

Collaborators: Sengkang General Hospital et al.

An integrated approach to managing frailty and intrinsic capacity: Interview with Associate Professor Laura Tay



An integrated approach to managing frailty and intrinsic capacity: Interview with Associate Professor Laura Tay Institute (2024)

Implementing the WHO **ICOPE** framework for Singapore's older adults: Interview with Dr Mimaika Ginting Research Institute (2024)



# Feasibility of the SHARE Programme & Project Carer Matters 2 (PCM2) (2020 - 2025)

Collaborators: Tan Tock Seng Hospital, University of Toronto, University of California



Applying the RE-AIM framework to evaluate a holistic caregiver-centric hospital-to-home programme: a 22(1): 933. (2022)

**Developing a Multicomponent** Intervention for Family Caregivers of Older Adults in Singapore: A Delphi Study. Health



# Design Future-ready and Sustainable Nursing Homes with Person-Centric Care Model (2017 - 2020)



Person-Centred Care Home for Residents with Dementia Dementia and

> Rethinking the design of nursing homes Skyline Issue 12 (2020)





# Highlights of GERI's Research in Implementing Integrated Care

## Perspectives of Frailty and Frailty Screening Among Healthcare Providers in Acute Care Settings in Singapore (2017 – 2018)

Collaborators: Khoo Teck Puat Hospital, Ng Teng Fong General Hospital, Changi General Hospital

Early identification of frailty is necessary to guide implementation of interventions to prevent associated functional decline. Consensus is lacking on how to clinically recognise and managi frailty.

To facilitate the translation of frailty screening and intervention practice, this project explored the perspectives of healthcare professionals (general surgeons, orthopaedic surgeons, anaesthetists, nurses, and emergency doctors) on frailty and frailty screening, to develop a feasible and effective frailty screening programme for older patients in the acute care settings in Singapore.

This study revealed important barriers to frailty screening in the acute care setting and informe how to implement frailty awareness and screening in the acute care setting in Singapore.

Interprofessional collaboration, a universal screening tool and education efforts to close the knowledge and expertise gaps in frailty care are necessary ways towards successful implementation of frailty screening and management in the acute care setting.

To read more -

Perspectives on frailty screening, management and its implementation among acute care providers in Singapore: a qualitative study, BMC Geriatrics 22(1): 58. (2022)



Identifying Key Psychosocial Predictors of Hospital Readmission Among Older Adults: Application of Textual Analytics in Electronic Health Records (2019-2020)

**Collaborators:** Ng Teng Fong General Hospital, Nanyang Technological University, Singapore University of Social Sciences

Prior literature suggests that psychosocial factors adversely impact health and health care utilization outcomes. However, psychosocial factors are typically not captured by the structured data in electronic medical records (EMRs) but are rather recorded as free text in different types of clinical notes.

Hence, a text-mining approach to analyse electronic medical records (EMR) can be used to identify key psychosocial factors that can augment existing predictive models in identifying older hospitalized adult a higher risk for 30-day readmission.

Funded by the ARISE-GERI Joint Research Fund, the project aimed to assemble a lexicon of risk-factor search terms and develop case detection algorithms to augment existing prediction models for 30-day hospital readmission.

The study found demonstrated that extracting psychosocial factors from EMR clinical notes can improve readmission risk prediction. In addition, risk prediction can be further improved when additional information about patients' psychosocial profiles are successfully applied to artificial intelligence models

To read more -

Prediction of Readmission in Geriatric Patients From Clinical Notes: Retrospective Text Mining Study. J Med Internet Res 23(10): e26486.(2021)



# PROgnostic Model for Advanced DEmentia (PRO-MADE) & Integration into Tertiary Clinical Care (2018 – 2026)

Collaborators: Tan Tock Seng Hospital, National Healthcare Group, Kho Teck Puat Hospital

Almost 70% of patients with Advanced Dementia (AD) do not receive timely palliative care due to challenges of recognising the terminal phases of end-stage dementia, leading to them dying in hospitals instead of their own homes or appropriate long-term care facilities.

GERI funded the development and validation of the PRO-MADE tool (2018 – 2021), to help clinicians identify AD patients who are at high-risk of one-year all-cause mortality, which in turn allows patients and families to be supported through early palliative care integration to improve symptom suffering and justify healthcare utilisation.

In the current phase, PRO-MADE is being integrated into the next generation electronic medical records (NGEMR) at Tan Tock Seng Hospit for widespread use by clinicians. To read more

Deaths in dementia: a scoping review of prognostic variables BMJ Supportive & Palliative Ca 11(3): 242. (2021)





Predicting mortality in patients diagnosed with advanced dementia presenting at an acute care hospital: the PROgnostic Model for Advanced DEmentia (PRO-MADE).

BMC Geriatrics 23(1): 255. (2023)

# Highlights of GERI's Research in Implementing Integrated Care

## The ComSA Patient-Centered Care (COPACC) Study (2017 - 2020)

**Collaborators**: NUS Saw Swee Hock School of Public Health, Tsao Foundation, National Health Group. Ministry of Health

GERI undertook an evaluation of the ComSA (Community for Successful Ageing) Hua Mei Clinic at Whampoa which provides a new centre-based primary care model for complex and frail older adults aged 40 years and above

Based on the Patient-Centered Medical Home (PCMH) model, the ComSA PCMH is the first PCMH demonstration in Singapore. This model uses a patient-centred care approach and management for patients referred by partnering primary care providers, acute hospitals and from community walk-ins.

It integrates the provision of primary care with bio-psycho-social needs assessment to address the issues o complex care, as well as preventive health for complex older patients.

In addition to the evaluation, GERI has also contributed to improved processes and care delivery in ComSA and dissemination and knowledge translation and ideas to improve patient care and health outcomes.

To read more -



A Patient-Centred Medical
Home Care Model for
Community-Dwelling
Older Adults in Singapore:
A Mixed-Method Study on
Patient's Care Experience.
International Journal of
Environmental Research
and Public Health 19 (2022)

An Integrated Patient-Centred
Medical Patient-Centred
Medical Home (PCMH) Care
Model Reduces Prospective
Healthcare Utilisation for
Community-Dwelling Older Adults
with Complex Needs: A Matched
Observational Journal of
Environmental Research and Public



## Multi-site Evaluation of the Geriatric Services Hub (GSH) (2019 - 2023)

Collaborators: Alexandra Hospital, Changi General Hospital, Ng Teng Fong General Hospital, Sengkang General Hospital, Singapore General Hospital, Ministry of Health

The GSH is a novel community-based frailty prevention programme piloted and implemented across five hospital sites (Alexandra Hospital, Changi General Hospital), Ng Teng Fong General Hospital, Sengkang General Hospital, Singapore General Hospital) over four years aimed at identifying and managing frailty amongst older adults in the community.

GERI was commissioned by Ministry of Health in 2019 to be the central evaluator for the GSH programme, working with both implementers and policymakers of the programme.

Through the course of the evaluation, GERI also supported programme implementation with regular knowledge sharing

The evaluation results have informed policy decisions about the implementation, sustainability, and scalability of th GSH programme at the national level.

The findings of the GSH evaluation have also highlighted the need for shorter forms of geriatric assessment a an alternative in primary and community care settings, which has been presented to the Ageing Planning Office, Ministry Of Health and the National Frailty Policy Implementation Workgroup.



Protocol for a mixed-methods and multi-site assessment of the implementation process and outcomes of a new community-based frailty programme. BMC Geriatrics 22(1): 586. (2022)



A Novel Integrated Geriatric Services Hub for Frailty Identification and Comprehensive Management of Community-Dwelling Older Adults in Singapore:
Impact on Health Service Utilization. Journal of the American Geriatrics Society 73(5): 1576-1587 (2025)



Patient-outcomes of a frailty management program for community-dwelling older adults in Singapore: A cohort evaluation. The Journal of Frailty & Aging 14(4) 100048 (2025)



## ACP Quality Implementation (AQI) Knowledge Exchange Platform (2022 - 2025)

**Collaborator:** Agency for Integrated Care

Advance Care Planning (ACP) is a process of planning for one's future health and personal care; a an essential tool that promotes the alignment of one's values and preferences towards healthcare delivery. To further strengthen the implementation of ACP across settings, the national ACP Steering Committee identified that it was useful to have a national framework that provided clearer definition, processes and outcomes of successful and quality ACP service delivery. With this, the Steering Committee had set up the ACP Quality Framework Development and Implementation Workgroup (AQI) to bring together key stakeholders to improve the implementation of ACP in integrance.

GERI representatives within this AQI workgroup had helped with the following

- Co-facilitation of the ACP World Café with more than 30 stakeholders from 25 different settings
   Development of research methodology for Implementation science approach for ACP quality improvement projects
- Consultancy support for 6 ACP Quality Improvement 6 projects across 5 institutions in terms of their Implementation Action Plan (IAP)
- Co-organisation with AIC (National ACP Office) the "Advance Care Planning: A Learning Journey of Continuous Improvement" Webinar on 9 October 2024 with 707 participants.
- Inputs on the Guidelines for Quality Implementation of Advance Care Planning specially for sections 3- Ethical and legal considerations in managing ACP, 4-Quality ACP implementation and 6- Quality Indicators.

The national guidelines reflected the consolidated efforts from multiple stakeholders such care as the AQI workgroup and ACP in Nursing Homes (NH) workgroup and other partners across different settings and was endorsed by the ACP National Steering Committee. These er guidelines provide essential principles, quality indicators and good practices to organisations who are helping their clients adopt ACP as part of care planning. The guide was launched over 2 ACP webinars on the 20 and 22 May 2025 to more than 900 healthcare workers from primary care, Public Healthcare Institutions and Community Care Organisations (CCO). Furthermore, the guidelines were also shared with CCOs' senior leadership during the Community Care Workplan seminar on 28 May 2025.

To read more –

Guidelines for Quality Implementation of Advance Care Planning Agency for Integrated Care (AIC) (2025)





# **GERI's Contributions in COVID-19 Research**

Impact Of COVID-19 Circuit Breakers Measures On Mental Health, Adaptive Behaviours And Digital Media Usage Of Older Versus Younger Adults In Singapore: Moderating Role Of Protective Factors (2020 – 2023)

The circuit breaker (CB) measures introduced due to the COVID-19 pandemic (from 7 April to 1 June 2020) has brought about challenges to lives of Singaporeans.

This study aims to understand the differences in mental health and coping experiences during the CB period between older and younger adults.

The study showed that older adults in Singapore had better mental health, perceived less stress-related concerns and were more adaptable psycho-socially as compared to younger adults, during the lockdown period, suggesting age-related advantages in emotional well-being in the wake of the COVID-19 pandemic.

This study was featured in the Straits Times in March 2022

To read more -



A comparative study on mental health and adaptability between older and younger adults during the COVID-19 circuit breaker in Singapore. BMC Public Health 22(1): 507 (2022)

Seniors had better mental health than younger adults during circuit breaker: Study The Straits Times (2022)



# Bridging Distances In Times of COVID-19: Does Communication Technology Acceptance and Use Combat Loss of Socio-emotional Well-being in Older Adults? (2020 – 2023)

Collaborators: National Healthcare Group, Singapore Management University

Information communication technology (ICT) is a main medium for people to maintain contac with others. However, social distancing measures from the COVID-19 pandemic may have adverse mental and physical health effects, especially on the older adults.

This study aims to understand older adults' attitudes towards technology (ATT) and perceived ease of use (PEOU) of technology and its perceived social support, relationship satisfaction and their well-being.

The study showed that ICT acceptance (competency) was significantly associated with perceived emotional support and subjective well-being (SWB) for older adults living alone, suggesting that more research and support is needed to increase older adults' acceptance of ICT to increase emotional support for older adults living alone, even during non-pandemic times.

To read more -

Acceptance of communication technology, emotional support and subjective well-being for Chinese older adults living alone during COVID-19: A moderated mediation model. PLOS ONE 18(9): e0291806. (2023)



# Combating Misinformation, Fear And Stigma In Response To The Covid-19 Outbreak: An International Collaboration Between Canada And Singapore (2020 – 2023)

Collaborators: St Michael's Hospital - Unity Health Toronto, Chinese Canadian National Council for Social Justice, Chinese Canadian National Council Toronto Chapter, Yee Hong Centre for Geriatric Care

Stigmatisation, misinformation and discrimination was magnified globally due to the COVID-1: pandemic.

Funded by the Canadian Institutes of Health Research COVID-19–Social dynamics, communication, and trust operating grant, this project was a collaboration between St Michael's Hospital - Unity Health Toronto and GERI to inform the development and usability testing of strategies and tool to combat stigma. fear and misinformation during COVID-19 and other infectious disease outbreaks.

Using the Health Stigma and Discrimination framework (HSDF) this study provided an exploratory account of the nature of stigma that resulted from the COVID-19 pandemic in an Asian context and shed light on facilitators in preventing and reducing stigma during an outbreak especially the role of trust and communications during a public health crisis.

To read more -

A qualitative study on health stigma and discrimination in the first year of the COVID-19 pandemic: Lessons learnt from a public health perspective Frontiers in Public Health Volume 11 (2023)



# Factors Influencing the Decision to Uptake COVID-19 Vaccine Based on the Theoretical Domain Framework (2020 – 2024)

Vaccine hesitancy is a major barrier that all governments are facing, especially in the light of the earlier COVID-19 pandemic.

Reduced vaccine take-up among the older population increases the risk of disease transmission and as a result may lead to high mortality rates among the elderly.

In order to understand the perceptions and attitudes of older adults, and their outlook on COVID-19 vaccination support and anti-vaccination concepts, GERI first undertook an Evidence Synthesis to identify barriers and facilitators that affect the acceptance rate of COVID 19 vaccines among adults in the general public, followed a door-to-door survey and in-depth interviews with older adults across Singapore who had rejected Singapore's mass-vaccination efforts.

Findings from this study will allow the healthcare system to tailor interventions and campaigns to encourage vaccination take-up by the older adult population.

To read more -

A social ecological approach to identify the barriers and facilitators to COVID-19 vaccination acceptance: A scoping review.
PLOS ONE 17(10): e0272642. (2022)







# **Expanding GERI's Healthcare Research Excellence: Strategic Growth and Collaborations**

# **Clinical Expert Panel**

GERI's Clinical Expert Panel was established to enhance the Institute's access to clinical domain knowledge in topics like dementia and frailty.

Consisting of 17 clinicians, from all three healthcare clusters as well as community health practitioners, their expertise forms a core component of GERI's research and health policy work.

Collectively their domain expertise spans geriatric medicine, primary care, population health and integrated care.

Through this panel, GERI researchers and Scientists have access to domain expert knowledge and experience in a Singapore context for practice specific issues, programme development or health policy-relevant matters where evidence may not be readily available.

Read more about how GERI's Clinical Expert Panel contributed to consensus building on Brief Geriatric Assessments in Singapore.



Developing a Delphi consensus on the domains and conduct of brief geriatric assessments in Singapore. Ann Geriatr Med Res. Feb 19. (2025)

# Evidence Synthesis, Biostatistics & Health Economics

GERI's work in the practice and policy spaces is augmented by its close collaboration with the Singapore Clinical Research Institute.

Since 2022, through GERI's Adjunct Scientists, Associate Professor Edwin Chan Shih-Yen, Associate Professor Mihir Gandhi, and Dr Shi Luming, have supported GERI researchers in their respective expertise in the areas of Evidence Synthesis, Biostatistics & Health Economics.

These three disciplines are cornerstone in bolstering GERI's repertoire of research capabilities in supporting implementation research, evaluations methodologies and evidence-informed policymaking for GERI's work in the practice and policy spaces.





Photos courtesy of the Consortium for Clinical Research and Innovation, Singapore (CRIS

# Evidence-Based Health Policy Research

Read more about GERI's Health Policy Group



Going beyond traditional research, GERI's Health Policy Group tackles policy challenges for population health impact.



Going beyond traditional research, GERI's Health Policy Group tackles policy challenges for population health impact Geriatric Education & Research Institute (2024)

#### Read an interview with Professor Lavis

"Conducting high-quality research on its own isn't enough to influence the 'big bang' decisions made by government policymakers or the 1,001 smaller decisions that determine whether the right mix of programmes, services and products equitably get to all those who need them."

- Health Policy Research: Q&A with Professor John Lavis

Health policy, made better with evidence: Q&A with Professor John Lavis



Health policy, made better with evidence: Q&A with Professor John Lavis Geriatric Education & Research Institute (2024)

# Knowledge Translation & Implementation Research

Central to GERI's research is its emphasis on knowledge translation and implementation sciences, to enable adoption of research evidence into routine care and practice, and to deliver tangible benefits to our population.

Working with GERI researchers since 2020, Adjunct Scientist, Professor Sharon E Straus, is a world expert in Implementation Science.

Through courses run by the Knowledge Translation Program at Unity Health Toronto, GERI has built up know-how across a variety of topics including selecting and evaluating implementation strategies, dissemination of complex research findings, working and engaging with implementers for intervention co-design, sustainability and scalability considerations for research.

Read more about Implementation Research at GERI:



Lost in knowledge translation? 5 tips to bring research evidence into implementation Geriatric Education & Research Institute (2024)

# **Community-Engaged Research**



Supporting GERI's foray into the intersection of social and health research is its appointment of Professor May Wang in 2023, a world expert in community-engaged research.

As GRN's Adjunct Scientist, she brings a wealth of expertise in transdisciplinary research and training to provide perspectives and advice on evaluation and community engagement through participatory research to address social and physical environmental determinants of health.

# **Collaborations in Social Health**

GERI recognises the need to expand further into the social aspects of ageing to better address complex challenges facing Singapore's ageing population and their families.

Here are some of our upcoming projects -



Improving Diet Quality of Community-Dwelling Seniors using a Community-Based Participatory Approach



Hearing Loss and Potential Links to Social Connection Among Older Adults (HELLO)



Implementation of a Minimal Equipment Exercise Intervention in Community-Dwelling Older Adults with Dementia



# **Research Impact at GERI**

Initiated in 2024, GERI developed its Research Impact Framework (RIF)<sup>1</sup>, to help researchers document and communicate the impact of their work.

The framework comprises seven categories capturing different aspects of research impact. Within each category specific indicators measure progress, outputs and/or outcomes.



Through GERI's RIF, research outcomes can be perceived as meaningful impacts, such as influencing policy and improving health outcomes, looking beyond academic achievements to the tangible benefits that research can bring to society.

Read more about GERI's Research Impact in its latest Annual Report



1 GERI's RIF is adapted from the Canadian Academy of Health Sciences (CAHS) Impact framework (2009) and the Association of Australian Medical Research Institutes (AAMRI) Impact Report (2021).

# **Research Collaboration Experiences with GERI**

"Our partnership with GERI has certainly been important in bridging interdisciplinary research between medical practitioners and the social sciences. Leveraging the GERI team's domain and methodological expertise, we have developed and validated a self-reported measure of intrinsic capacity, which has enabled us to keep our research efforts in tandem with the World Health Organization's healthy ageing directives. This measure has been fielded to members of the Singapore Life Panel, allowing us to track and better understand how well-being can be ensured for older Singaporeans."

# -Professor Paulin Straughan

Principal Investigator (Director, Centre for Research on Successful Ageing (ROSA), Singapore Management University)

"The Built Environment in Falls and ArthrITis (BE-FIT) team and I have enjoyed our collaboration and partnership with our co-investigators at GERI. They provide interesting and insightful input particularly from an implementation perspective. This entails how we could use various knowledge translation and implementation frameworks to turn our research findings into actual actionable impact at both a policy level and also on the ground, in partnership with all our important stakeholders."

# -Dr Bryan Tan Yijia

Co-Principal Investigator (Consultant, Department of Orthopaedic Surgery, Woodlands Health)

"Our collaboration with GERI will strengthen the implementation research capabilities for the conduct of INFINITY-ICOPE. This is essential for a complex programme such as this. The pre-implementation qualitative study conducted by GERI has identified key barriers and enablers among stakeholder implementers, which have guided the selection and development of implementation strategies according to evidence-based frameworks. GERI's support has been instrumental in ensuring rigour to the implementation science, bringing in appropriate theory and frameworks to account for contextual factors."

## - Associate Professor Laura Tay

Principal Investigator (Head and Senior Consultant, Geriatric Medicine, Sengkang General Hospital)



- 2 Yishun Central 2, Singapore 768024
- www.geri.com.sg
- in Geriatric Education & Research Institute
- enquiry@geri.com.sg