

2021

Grant Call on Caregiving Ecosystem

National Innovation Challenge (NIC) on Active and Confident Ageing

PUBLIC DOCUMENT AND
APPLICATION GUIDE

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Organised by:
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IMPORTANT NOTICES

1.1 For the avoidance of doubt, this Public Document and Application Guide for the Grant Call on Caregiving Ecosystem (CareEco) shall be subject to the important notices for applicants as set out in the NMRC Research Grant Terms and Conditions and its Annex: Additional Terms and Conditions for Projects Funded under the National Innovation Challenge on Active and Confident Ageing (NIC on Ageing).

INTRODUCTION

2.1 Rising life expectancy in Singapore, accompanied by shrinking family sizes and an ageing population, brings its own set of challenges: the prospect of more seniors at post-retirement age, a shrinking old-age support ratio, an inexorable growing healthcare expenditure and heavier caregiver burden. The World Health Organization (WHO) estimates that globally, 349 million people are care-dependent and of these, 101 million are over the age of 60 years. 2019 estimates¹ suggest that in Singapore there are around 110,000 to 120,000 family members or friends serving as caregivers for persons aged 65 and above, with 85,000 to 90,000 care recipients² in that age bracket.

2.2 More recently, the COVID-19 pandemic and related lockdown measures to contain the spread of the virus have accelerated shifts such as the adoption of digital technology, remote work, job disruptions amongst others. Taken together, these shifts have served to amplify stresses on caregivers, particularly for those who are expected to look after their loved ones round-the-clock without professional support, others who must manage both caregiving and workplace responsibilities, and those facing financial hardship or joining the growing ranks of homebound unemployed.

2.3 Against this backdrop, future research and innovation on caregiving could focus on: **(i) how the needs of both caregivers and care recipients (e.g. psychological, healthcare needs) evolve throughout the caregiving journey, including the design and development of policies, programmes and solutions to better meet these needs; and (ii) the use of information and communications technology (ICT) to support caregivers, or “use cases” that would activate the community to provide caregiving support; which could eventually inform novel models for care services.** These research outcomes should ultimately help bridge new and existing policy gaps where caregiver support is concerned in the post COVID-19 new normal, leading to further enhancements of key enablers and capabilities to better support caregivers under the Caregiver Support Action Plan (CSAP)³.

¹ Estimates based on extrapolated data from the Singapore Retirement and Health Study conducted in 2014.

² Care recipients were defined as those who had difficulties doing some activities (Activities of Daily Living or Instrumental Activities of Daily Living) and required assistance over the last 12 months.

³ Launched by MOH in 2019, the Caregiver Support Action Plan includes the following key initiatives: expanding the capacity of aged care services and range of care options for seniors, and strengthening support for caregivers by enhancing care navigation, financial support, workplace support, caregiver respite services, and caregiver empowerment and training.

OBJECTIVES

3.1 The aim of the grant call is to catalyse multi-disciplinary translational research and innovation to achieve sustainable caregiving in the community setting, whilst addressing the current and future trends of caregiving in Singapore. This ought to translate to new care models and intervention programmes that can be implemented nationally to strengthen the caregiving ecosystem, with outcomes that are effective and help lower costs at the systems level. Technology should serve as a key enabler for the proposed solutions/interventions to enhance their impact and scalability.

CHALLENGE STATEMENT

4.1 A Principle Investigator (PI) can submit **only one application** in response to the challenge statement. However, he/she may be part of the Project Team of other applications.

4.2 The challenge statement to Project Teams is:

The challenge is to develop **innovative** solutions on caregiving support that are **sustainable and scalable** in the community setting, to address the **multi-factorial needs** of caregivers and care recipients as they evolve over the care journey. The solutions should achieve **better outcomes than currently in terms of improving the well-being of care recipients and caregivers, including reducing the number of caregiving hours, hospitalisations or subsequent institutionalisation for care recipients, by at least 25%.**

4.3 Project Teams should specify the target group of caregivers and care recipients, and their needs addressed by the solution/intervention. The proposed study should also address barriers to technological adoption of the solution/intervention. Project Teams must consider the feasibility and scalability of the solution/intervention and its ability to be sustained in the longer term.

GUIDELINES AND CONSIDERATIONS

5.1 Project Teams must be willing to collaborate with the Grantor or Grantor's Affiliates to ensure that proposed solutions are flexible, extensible and based on open data standards used by organisations in Singapore. This is to facilitate future enhancements, information exchange and backend integration of services and functionality, to both existing and future systems.

ELIGIBILITY

General Eligibility

6.1 The Grant Call on Caregiving Ecosystem is open to **all public and private entities and institutes of higher learning (IHLs)**. We strongly encourage multi-disciplinary and/or cross-institutional innovation and ideas. **Host Institutions must be public entities or IHLs.** Project Teams should identify an individual from the Host Institution as the Lead Principal Investigator (Lead

PI), and specify technical and implementation partners for research and development and the deployment of solutions (e.g. technology providers, service providers, industry partners, community organisations). Host Institutions must justify that private partners are financially capable, and have the ability to support the translation of innovative solutions for the duration of the project.

Project Team Composition

6.2 Project Teams shall identify a Host Institution Office of Research (HI ORE). If awarded the Grant, the HI ORE shall receive the Funding on behalf of the Project Team. The HI ORE shall in turn make funding arrangements with the other Partner Institutions.

6.3 Applicants for the Grant Call on Caregiving Ecosystem are required to form a Project Team comprising:

Members from multi-disciplinary backgrounds (e.g. pairing medical and technology, engineering); and

An Implementation Partner (e.g. service providers, community organisation) to test-bed the proposed solutions.

6.4 There is no restriction on the number of Institutions, Investigators and Collaborators in each Project Team. However, a representative from each collaborating Institution, organisation and/or Implementation Partner should be appointed as part of the Research Team as Co-Investigator or Collaborator.

6.5 The Grantor reserves the right to disqualify or reject any Project Team at any time in the event of the withdrawal of any Institution, Investigator or Collaborator from the Project Team.

Lead Principal Investigator

6.6 Each Project Team must appoint a Lead Principal Investigator (Lead PI) to oversee and coordinate the implementation of the Research during the funding period of the Research.

6.7 The Lead PI will serve as the primary point of contact with the Grantor for the purpose of the NIC. The Lead PI shall make all reasonable efforts to ensure that all Institutions, Investigators and Collaborators in the same Project Team are informed of all matters relating to the Grant.

6.8 The Lead PI should have PhD or MD/MBBS/BDS qualifications (*exceptions would be made on a case-by-case basis*).

6.9 The Lead PI must hold a primary appointment in a local publicly funded institution and salaried by the institution.

6.10 The Lead PI must be an independent PI with demonstrated track record of research, as evidenced by the award of nationally competitive funding (international funding to be considered on a case-by-case basis), substantial publication record in the past 3 years, or PI status in research institutes.

6.11 The Lead PI must have a laboratory or research program in Singapore.

6.12 The Lead PI must hold a minimum of 9 months employment (per calendar year) with local Singapore Institution(s). Upon award, the PI must agree to fulfil at least 6 months of residency in Singapore for each calendar year over the duration of the grant award.

6.13 The Lead PI must not have outstanding reports from previous BMRC, NMRC grants and other national grants.

6.14 For proposals involving patients, the PI should be Singapore Medical Council (SMC) registered; or should be able to demonstrate ability to access patients through SMC registered Co-Is or Collaborators.

SUPPORT AND FUNDING

Research Funding

7.1 Institutions may qualify for full funding support for direct costs to public entities and IHLs, while private entities that are part of the Project Team will be funded at up to 70% of supportable direct costs. Research will be funded for a period of up to five (5) years, with the possibility of extension for another one (1) year with no additional funding from the Grantor. Collaborators are not entitled to receive (directly or indirectly) any or any part of the Funds, whether in cash or in the form of Assets acquired using the Funding or otherwise. Approved qualifying direct costs include:

- Expenditure of Manpower (EOM)
- Expenditure on new Equipment (EQP)
- Other Operation Costs (OOE)
- Overseas Travel (OT)

7.2 Project Teams may refer to the [Guidelines for the Management of NMRC funding programmes](#) for more information on types of expenses that are fundable. The actual funding quantum for selected Research will be determined upon assessment of the impact and scope of the Research.

7.3 Support for indirect costs⁴, on top of supportable qualifying direct costs, is capped at 20% of the supportable qualifying direct costs. Only Singapore-registered Institutions that are IHLs or not-for-profit entities, including public healthcare providers, may qualify for support for indirect costs.

7.4 Funding will be provided in four phases, i.e. **Proof of Concept (POC)**, **Proof of Value (POV)**, **Test-Bedding** and **Scale-Up**, with at least two-years for the **Test-Bedding** and **Scale-Up** phases. Project Teams will have the flexibility to decide the time allocated to each phase, and are expected to submit proposals accompanied with a detailed implementation plan⁵.

	Design Phase	Development Phase	Implementation Phase	Scale-Up Phase
	Proof-of-Concept	Proof-of-Value	Test-bedding	Deployment
Description	<p>To articulate the concept of the programme / service / prototype and the process by which to achieve stated outcomes.</p> <p>To provide studies and analysis that support the concept's viability for further development.</p>	<p>To develop and validate the programme / service / prototype so that it takes on a clearer form to achieve the intended outcomes.</p>	<p>To test and validate the programme / service / prototype in the field (a relevant environment).</p>	<p>To refine and roll-out the programme / service / solution in multiple sites or settings.</p>

⁴ Indirect Costs are incurred for common or joint objectives and there cannot be identified readily and specifically with a particular Research, but contribute to the ability of the Host Institution to support the Research.

⁵ This plan should include stages, deliverables, resources required, milestones and targets at each phase.

	Design Phase	Development Phase	Implementation Phase	Scale-Up Phase
	Proof-of-Concept	Proof-of-Value	Test-bedding	Deployment
Requirements	N.A.	Successful attainment of KPIs and Milestones for Design Phase. Proof-of-concept shows promising results and clear validation plan for proposed programme/service/prototype through a pilot.	Successful attainment of KPIs and Milestones for both Design and Development phases. Validated pilot programme/service/prototype before field test-bedding.	Successful attainment of KPIs and milestones for both Design and Development phases. Validated programme/service/prototype as test-bedded in the field, before scale-up in multiple sites.
Time Period	Five years, with the possibility of a no-cost extension for another year. Project Teams will have the flexibility to decide the time allocated to each phase. However, the Implementation and Scale-up phases should last for a minimum of two years.			

7.5 Project Teams are to demonstrate clear outcomes for the Proof-of-Concept and Proof-of-Value stages before proceeding to the Test-bedding stage. Project Teams who fail to do so will not receive funding support for the Implementation and Scale-Up phases of the Research.

7.6 All Research must be conducted in Singapore and Funding shall not flow out of Singapore to support overseas entities, including Collaborators.

7.7 Project Teams will submit a Letter of Intent (LOI). Shortlisted LOIs will be invited to submit a Full Proposal, and the Grantor will notify the Project Teams if they are successful for the award of the Grant. Funding shall be granted subject to the mutual agreement between the relevant Project Teams and the Grantor on the terms and conditions of the Grant as set out in a Letter of Award.

7.8 Funding will be administered and reimbursed through the NIC Programme Office (NICPO).

APPLICATION SUBMISSION

General Instructions

8.1 Capitalised expressions used without definition shall have the meanings assigned to them in Public Document and Application Guide for the Grant Call on Caregiving Ecosystem unless otherwise expressly stated.

8.2 To submit an LOI application on IGMS, PIs are required to obtain a CorpPass from your institution and this will be used to access IGMS. For more information on how to register your institution's representative as a CorpPass admin or obtain a CorpPass, please visit www.corppass.gov.sg.

8.3 Applicants are to complete all required sections in the IGMS application for the LOI application in Table 1 below. For reference, PI may also download the application templates (which will be made available before or on the day of launch of the Grant Call) on the NMRC website, under the section for Grant Call on Caregiving Ecosystem.

8.4 Use **Arial font size 10** for all text and attachments. Please follow the instructions for each section closely.

8.5 For identification purposes, please indicate the name of the Lead PI and Host Institution in the header of the respective templates.

8.6 The Lead PI, Co-Investigator(s) and Collaborator(s) must fulfil the eligibility criteria specified under Table 1 of this document.

8.7 Each application is limited to only 1 Lead PI.

8.8 Each Research Team member (Lead PI, Co-I, Collaborator) must submit their CVs for the LOI application, based on the CV template and page limit specified for each role in Table 1. Please indicate "NA" if the required information is not applicable and note that NICPO will not be responsible for any missing information not provided in the CV.

8.9 Co-Is must be salaried employee from a local public/private institution. Researchers from overseas institutions can only participate as Collaborators. The terms of collaboration with overseas research institutions must conform to NMRC's existing policies.

8.10 Plagiarism (without permission from author or reference made to source) will be referred to Host Institution for investigation and may be subjected to disciplinary actions.

TABLE 1. REQUIRED SECTIONS OF THE LOI APPLICATION

TEMPLATE	Description	Page Limit
Proposal	Research Proposal	5 pages

CV	Curriculum vitae of the Lead PI, Co-I(s) and Collaborator(s)			3 for Lead PI 1 for Co-I 1 for Collaborator
	Role	Definition	Eligibility criteria	
	Lead PI	An individual who is expected to be actively involved in overall project management and accountable for deliverables.	He/She must hold a primary appointment in a local publicly funded institution and salaried by the institution.	
	Co-Investigator	An individual involved in the scientific development and execution of the project. A co-Investigator typically devotes a higher percentage of effort to the project compared to a collaborator and is considered a key research personnel of the “Research Team” . There is no limit on the no. of participating co-Is.	He/She should be salaried by a local public/private institution.	
	Collaborator	An individual involved in the scientific development and execution of project. A collaborator typically devotes only a specific percentage of effort to the project. There is no limit on the no. of participating collaborators.	He/She can be from local/overseas/public/private institutions.	
	Top 10 publications of Lead PI and Co-Is in the last 10 years (CY2011 – present)			
Other Support and Annexes	Other Support For <u>Lead PIs</u> only - Please provide the details for the grants currently held or being applied for in the table provided in the template.			N.A.

	Annexes		
	Annex	Description	
	Annex A	Scientific abstracts of all grants listed in Section 1(a) to (c) of the Other Support and Annexes Template; for NMRC- and NICPO- funded projects, please indicate the IGMS project number, provide the scientific abstract and include the latest research outcomes (achieved Key Performance Indicators or short write-up of new knowledge gained.	
	Annex B	Industry support letters (if any)	
Declaration and additional information	Declaration by Project Team and Host Institution Endorsement and submit scanned copy of the signatories on a separate page.		N.A.
	Additional Information on Project Team Please provide the details for institutions/collaborators/implementation partners which are private companies or non-profit organisations. Public healthcare providers, Institutes of Higher Learning and Research Institutes are not required to provide the information.		N.A.

Submission of Letter of Intent (LOI) Application

8.11 It is mandatory for all LOI applications to be submitted and endorsed by HI ORE's Director of Research (DOR) via IGMS by 3 May 2021, 5pm. Internal HI ORE submission deadlines may apply, please check with your Office of Research (ORE) for more information. We will not entertain any late submissions or submissions from individual applicants without endorsement from the HI ORE. Please note that any clarifications sought by the DOR/ORE will need to be addressed by the PI prior to submission deadline.

8.12 NICPO reserves the right to reject the following:

- (i) Incomplete applications e.g. missing documents such as the research proposal, signatures, sections left blank and missing CVs, etc.
- (ii) Applications using incorrect/outdated templates (please use only templates from the IGMS/NMRC website).
- (iii) Proposal or CV templates that exceed the stipulated page limits.

8.13 Project Proposals should include, but shall not be limited to, the following:

Letter of Intent	<ul style="list-style-type: none"> • Summary of objectives • Literature review • Key components and innovations • How the Research addresses the challenge statement
Full Proposal	<ul style="list-style-type: none"> • Objective(s) of the Research; • Summary of supporting evidence from the literature review for the intended objective(s) and/or solution(s) of the Research; • Description on the key components and innovations of the Research and how the Research could address the challenge statement, including computations on KPIs; • Detailed Research phases, including a detailed implementation plan, timelines and milestones for the Research; • Detailed evaluation framework and KPIs to track for the Research; • Cost-Effectiveness, scalability and sustainability of the proposed solution; • Estimated costs to or fees/charges payable by client, if any; • Required funding for the Research; • Challenges in Research design; • Discussion on key assumptions of the Research; and • IP declaration.

8.14 Additional guidance on completing Applications are as follows:

- a) Roles and Responsibilities. The roles and responsibilities of every Institution/organisation, Investigator and Collaborator must be clearly specified. Specifically, Project Teams are to articulate which Institution, Investigator or Collaborator will be in charge of tracking outcome measures, ensuring safety and well-being of persons involved in any activity conducted in relation to the Research and administering of the Funding if awarded.
- b) Target group. Project Teams should specify the target group of caregivers and care recipients, and their needs addressed by the solution/intervention. The proposed study should also address barriers to technological adoption of the solution/intervention. Project Teams must consider the feasibility and scalability of the solution/intervention and its ability to be sustained in the longer term.
- c) Implementation Plan. Project Teams are required to describe all implementation activities, stages, Milestones and targets.
- d) Tracking of KPIs. For LOI, Project Teams are required to describe how they intend to evaluate the progress of the Research and the KPIs to be tracked. For Full Proposal, Project Teams are required to track the following **mandatory KPIs and set targets**, prior to and following implementation of the proposed solutions.

Key Area	KPI
<u>KPI 1: Impact</u>	Project Teams are to demonstrate that the proposed solution has <u>met the needs of caregivers and care recipients</u> . Possible KPIs could include: <ul style="list-style-type: none"> • Reduction in caregiving hours • Reduction in caregiver stress • Improved quality of life of care recipients • Better self-care amongst care recipients • Increase in number of caregivers who have re-entered the workforce, or continue with employment
<u>KPI 2: Cost-Effectiveness</u>	Project Teams are to demonstrate that the proposed intervention or solution is <u>cost-effective as compared to existing solutions and interventions or the standard of care</u> .
<u>KPI 3: Quality</u>	Project Teams are to propose <u>at least three client KPIs</u> to track. Possible client KPIs can include: <ul style="list-style-type: none"> • Acceptability by target population • Adherence to programme • Improvement in functional, physiological, emotional, behavioural, social and cognitive well-being as measured by appropriate tools

Project Teams are required to indicate existing baselines of these KPIs in their proposal and set targets to be met at the end of the project. Project Teams are to also indicate appropriate tools for measuring these KPIs.

- e) Budget. Project Teams are required to articulate the **total required resources and budget** on IGMS for the implementation of their Research. Qualifying direct costs are as described in clause 7.1 above. Project Teams must ensure accuracy and prudence in budgeting. The Grantor shall not be obliged to consider any requests for additional funding in the event that the Project Teams fail to exercise due diligence in budgeting.
- f) Safety and Regulatory Considerations. Project Teams shall remain accountable for the safety of human subjects during the course of the project and be responsible to submit any applications required for ethics approval, if necessary. Project Teams shall also ensure adherence to relevant ICT risk mitigation frameworks for associated technological components of the project.
- g) Declaration of IP. Project Teams are required to disclose and describe any Background IP (whether owned by an Institution, Investigator, Collaborator or a third party) mentioned in the Application. The information to be disclosed shall include the type of IP (e.g. patent, copyright, confidential information), the IP owner, whether the IP has been registered or is pending registration, and whether the IP is commercially available off-the-shelf or whether the IP must be customised for use for the Research.

EVALUATION AND AWARD

Evaluation

9.1 Applications will be evaluated by an evaluation panel comprising evaluators from multidisciplinary backgrounds, including representatives from MOH.

9.2 Shortlisted Project Teams will be invited to submit Full Proposals by a stipulated deadline. Shortlisted teams may be required to present their Research and answer questions from the Evaluation Panel after the submission of the Full Proposals. Details on the requirements, date and time of the presentation (if any) will be released to the shortlisted Project Teams at a later date.

9.3 The criteria listed below shall be used for the evaluation of the Applications.

Component	Evaluation Criteria
Grant Requirements	<ul style="list-style-type: none"> • Proposal Submission • Locally-Based Project & Lead Principal Investigator • Team Composition • Address Challenge Statement
General	<ul style="list-style-type: none"> • Expertise and Ability of the Lead Principal Investigator and the team to carry out the proposed research project
Scientific Merit	<ul style="list-style-type: none"> • Address an important problem to yield significant results • Appropriate study design and sound basis for the intervention • Robust methodology and analyses • Advances scientific knowledge, technical capability, and the standard of care
Impact and Outcomes	<ul style="list-style-type: none"> • Impact • Cost-effectiveness of the proposed solution • Proposed outcomes / KPIs • Scalability and sustainability of proposed solution
Innovativeness	<ul style="list-style-type: none"> • Innovative features of the proposed solution, and why are they deemed innovative
Implementation	<ul style="list-style-type: none"> • Project feasibility and adoption in the local context • Reasonableness of funding request

9.4 The Evaluation Panel reserves the right to reject any or all Applications submitted for the Grant Call on Caregiving Ecosystem, without being obliged to give any reason thereof.

Moderation

9.5 Where an Application is selected by the Evaluation Panel for consideration for award, the Project Team, through the Lead PI and HI ORE, will be notified. The terms of the Research,

Milestones, KPIs and Funding quantum may be adjusted by the Grantor in agreement with the Project Team.

Award

9.6 The final decision to award the Grant will be made by the Grantor on the Evaluation Panel's recommendation. The Grantor and the Evaluation Panel shall not be obliged to enter into any correspondence with any Institution, Investigator or Collaborator regarding reasons for non-acceptance of an Application.

Post-Award Monitoring

9.7 Awarded projects will be required to submit **6-monthly progress updates**, and be subject to an **Annual Review by a Review Panel (RP) comprising subject matter experts, and a Mid-Term Review at the project mid-term mark where recommendations from the RP has to be endorsed by the NIC Select-Committee**. Project Teams are to demonstrate clear progress for the various project phases, failing which the NIC Programme Office and the NIC Select-Committee may review the quantum or continuity of funding support for subsequent phases of the project.

9.8 Awarded Project Teams will also be required to submit a final report at the end of the funding period of the Research detailing the learnings made and whether the Research has met the desired outcome of the challenge statement.

IMPORTANT DATES TO NOTE

10.1 The timeline for key activities under the Grant Call on Caregiving Ecosystem is set out below.

Activity	Date
Launch of Grant Call/Submission of LOI, Review and Shortlisting	Apr - Jun 2021
Submission of Full Proposals and Review	Jun - Nov 2021
Evaluation Panel meeting and Interview with Project Team	Nov - Dec 2021
Announcement of Results	Dec 2021 – Jan 2022

CONTACT DETAILS

11.1 Any enquiries regarding the NIC and/or the Grant Call on Caregiving Ecosystem should be emailed to NIC_Ageing@MOH.gov.sg.