

2017



MINISTRY OF HEALTH  
SINGAPORE

# Healthy Ageing Innovation Grant

## National Innovation Challenge (NIC) on Active and Confident Ageing

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Organised by:

**Ministry of Health Singapore (MOH)**

Supported by:

**National Research Foundation (NRF)**

**Health Promotion Board (HPB)**



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## IMPORTANT NOTICES

1.1 For the avoidance of doubt, this Public Document for the Healthy Ageing Innovation Grant shall be read with and shall be subject to the important notices as set out in Annex A.

## INTRODUCTION

2.1 Our population is ageing rapidly. One in four Singaporeans will be aged 65 and above by 2030. Even as more Singaporeans are living longer and healthier, about 6% of seniors aged 60 years and above today are frail<sup>1</sup>. This proportion is expected to increase as our population ages. Frailty is generally agreed to be multi-dimensional<sup>2</sup> and an age-related state of high vulnerability to adverse health outcomes<sup>3</sup> after a stressor<sup>4</sup>. There is a lack of agreement on the tools to systematically detect and grade the severity of frailty as well as understand the transition between pre-frailty and frailty.

2.2 Hence, it remains a challenge to efficiently identify seniors with frailty, especially pre-frail seniors who would benefit from interventions. With appropriate identification and interventions, we can help seniors better manage chronic conditions that may be associated with frailty, increase muscle strength and improve neuromuscular function and functional abilities. This would in turn reduce institutionalisation and dependency in activities of daily living (ADL). More importantly, if we can delay the onset or reduce the risk of frailty, seniors can age in place independently and with grace.

## OBJECTIVES

3.1 The Healthy Ageing Innovation Grant aims to catalyse translational research and innovations that could (i) reduce the risk, (ii) delay the onset and/or (iii) decelerate the progress of physical frailty in older adults. This Grant is the fifth Grant call under the National Innovation Challenge on Active and Confident Ageing (NIC) and is organised by the Ministry of Health (MOH) and supported by the National Research Foundation (NRF) and Health Promotion Board (HPB).

## CHALLENGE STATEMENT

4.1 Applicants forming Project Teams can submit more than one Application and the Application should be in response to the challenge statement. However, a Project Team will only be awarded Funding for one Research project.

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<sup>1</sup> Vaingankar et al. Prevalence of frailty and its association with sociodemographic and clinical characteristics, and resource utilization in a population of Singaporean older adults. *Geriatr Gerontol Int*. 2016 Aug 31.

<sup>2</sup> A multi-dimensional syndrome which may include physical, psychological, cognitive and social impairment. These include frail immune system, frail skeletal muscle – sarcopenia etc.

<sup>3</sup> Frailty predisposes individuals to falls, fractures, disabilities, dependencies, hospitalisation and even death.

<sup>4</sup> These may include a new drug, an infection or a minor surgery etc.

#### 4.2 The challenge statement to Project Teams is:

To develop **an appropriate and efficient method of identifying pre-frail or frail seniors, including those at risk of accelerated decline and/or designing end-to-end innovative and scalable preventive intervention programmes or solutions that would reduce the risk, delay the onset and/or decelerate the progress of physical frailty**. Project teams must demonstrate the methodology to be used in measuring and achieving the desired outcome pre-and post-intervention.

4.3 **Project Teams should focus on the physical aspects of frailty<sup>5</sup>**, although Research targeting cognitive and/or other aspects of frailty *in addition to* physical frailty may also be considered. Project Teams may consider (i) multi-domain preventive intervention programmes to keep pre-frail seniors active and healthy, (ii) preventive interventions that tackle a condition that could lead to frailty (e.g. sarcopenia or muscle loss, association between chronic diseases such as diabetes and frailty), or (iii) even technological solutions that could make the diagnosis of pre-frailty or frailty simpler, decelerate the progress of frailty by preventing falls and reducing the risk of immobility or delay the onset of disabilities. Research solely focussed on telehealth, tele-monitoring or tele-rehabilitation would not be considered.

4.4 For avoidance of doubt, the words and expressions in the challenge statement shall have the meanings assigned to them as follows:

“Frailty” Means a multi-dimensional syndrome which may include physical, psychological, cognitive and social impairment. These include frail immune system, frail skeletal muscle – sarcopenia etc.

### **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.

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<sup>5</sup> This Healthy Ageing Innovation Grant focuses on physical frailty as the primary objective. This complements the earlier NIC Grant Call on Cognition launched in Nov 2015.

## ELIGIBILITY

### General Eligibility

6.1 The Healthy Ageing Innovation Grant is open to all public, private or non-profit institutions, including healthcare providers, research institutes and institutes of higher learning (IHLs). There are no restrictions on nationality for individuals, but the entity they represent must be registered in Singapore either through the setting up of a local equivalent of the entity in Singapore or through a consortium with Singapore-registered entities in order for the entity represented to be eligible.

### Project Team Composition

6.2 Applicants for the Healthy Ageing Innovation Grant are required to form a Project Team comprising:

- a) Members from multi-disciplinary (e.g. pairing medical and technology, engineering) backgrounds; and
- b) An Implementation Partner (e.g. service providers, community organisation) to test-bed the proposed solutions.

6.3 There is no restriction on the number of Institutions, Investigators and Collaborators in each Project Team.

6.4 Applicants are expected to form their own Project Teams to participate in the Healthy Ageing Innovation Grant. 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

6.5 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.

6.6 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.

6.7 The Lead PI must reside in Singapore for at least six (6) months in each calendar year over the duration of the funding period of the Research.

## Host Institution

6.8 Project Teams shall identify a Host Institution. If awarded the Grant, the Host Institution shall receive the Funding on behalf of the Project Team. The Host Institution shall in turn make funding arrangements with the other Partner Institutions.

## SUPPORT AND FUNDING

### Research Funding

7.1 Institutions may qualify for funding of **up to 80% of total approved qualifying costs** to develop and implement their Research for a period of up to three (3) 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 costs include:

- a) **Developmental costs**: These may include costs related to new equipment, IT software, manpower and training that are assessed prior to the implementation of the Research, and necessary to operationalise and evaluate the Research. Other developmental costs will be assessed on a case-by-case basis.
- b) **Operating costs**: These include incremental manpower cost, engagement of services, travelling and transport and minor assets including medical equipment that are assessed to be necessary to operationalise and evaluate the Research.

7.2 Project Teams may refer to the Funding Guide for the NIC available for download from the National Medical Research Council (NMRC) webpage at ([http://www.nmrc.gov.sg/content/nmrc\\_internet/home/grant-navigation/competitive-research-grants/national-innovation-challenge-on-active-and-confident-ageing.html](http://www.nmrc.gov.sg/content/nmrc_internet/home/grant-navigation/competitive-research-grants/national-innovation-challenge-on-active-and-confident-ageing.html)) for more information on Funding. 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 costs, 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 phases, subject to the successful attainment of Milestones and KPIs tied to each phase, as described in the table below:

	<b>Design Phase</b>	<b>Development Phase</b>	<b>Implementation Phase</b>
	<b>Proof-of-Concept</b>	<b>Proof-of-Value</b>	<b>Test-bedding</b>
<b>Description</b>	To articulate the concept of the programme / service / prototype and the process by which to achieve stated outcomes  To provide studies and analysis that support the concept's viability for further development.	To develop and validate the programme / service / prototype so that it takes on a clearer form to achieve the intended outcomes.	To test and validate the programme / service / prototype in the field (a relevant environment)  May include initial production and roll-out.
<b>Requirements</b>	N.A.	Successful attainment of KPIs and Milestones under the 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 under both the Design and Development phases. Validated pilot programme/service/prototype before field test-bedding.
<b>Time Period</b>	Three years, with the possibility of an extension for another one (1) year. Project Teams will have the flexibility to decide the time allocated to each phase. <b>The Implementation Phase should last for at least one year.</b>		

7.5 Project Teams are required to track three mandatory KPIs pre and post implementation of its solutions in the Implementation Partner as described in clause 8.8(d) below.

7.6 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 Phase (or Test-bedding stage) of the Research.

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

7.8 The relevant Project Teams will be notified by the Grantor if they are shortlisted 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.

7.9 Funding will be administered and reimbursed through the NIC(PO).

## APPLICATION SUBMISSION

### Overview of Application Submission

8.1 Applications will be submitted through a **two-stage process**, as follows:

- a) Project Abstract. Project Teams shall first submit an abstract of their Research, using the “Project Abstract Submission Template” that can be downloaded from the NMRC webpage at ([http://www.nmrc.gov.sg/content/nmrc\\_internet/home/grant-navigation/competitive-research-grants/national-innovation-challenge-on-active-and-confident-ageing/healthy-ageing-inno-grant.html](http://www.nmrc.gov.sg/content/nmrc_internet/home/grant-navigation/competitive-research-grants/national-innovation-challenge-on-active-and-confident-ageing/healthy-ageing-inno-grant.html)). Project Teams shall furnish all necessary information and documents as required in the template. Two hard copies of the Project Abstract and any supporting documents should reach the Grantor **no later than 14 July 2017 at 5:00pm**. All Project Abstracts received will be preliminarily assessed for compliance with the eligibility criteria and scope. Shortlisted eligible Project Teams will be asked to flesh out their Research in greater detail for the second stage.
- b) Project Proposal. The Grantor will invite the respective Lead PIs of shortlisted Project Teams via email to submit their detailed Project Proposals using the “Project Proposal Submission Template” that will be emailed to them. Project Teams shall furnish all necessary information and documents as required in the template. Two hardcopies of the Project Proposal and any supporting documents should reach the Grantor no later than the deadline stated by Grantor in the invitation email. Project Teams shall furnish any other additional information and documents which may be requested by the Grantor, within the deadline set by the Grantor.

8.2 All submissions to the Grantor must be clearly marked as “Healthy Ageing Innovation Grant - National Innovation Challenge (NIC) on Active and Confident Ageing”, and delivered or mailed to:

National Innovation Challenge (NIC) on Active and Confident Ageing  
Programme Office  
Ministry of Health  
College of Medicine Building  
16 College Road Singapore 169854



8.3 In addition to submitting hard copies as provided above, Project Teams shall email soft copies of their Project Abstract and Project Proposal to [NIC\\_Ageing@moh.gov.sg](mailto:NIC_Ageing@moh.gov.sg) by the respective deadlines.

8.4 The Grantor reserves the right to reject Applications, or parts thereof, which have been submitted late.

### **Project Abstract**

8.5 Project Abstracts should include, but shall not be limited to, the following:

- Objective(s) of the Research;
- Literature review and the evidence/basis for the Research;
- Key components and innovations of the Research;
- How the Research could address the challenge statement;
- Summary of the implementation plan, timelines and Milestones of the Research; and
- Summary of the evaluation framework and KPIs to track for the Research.

8.6 The length of the Project Abstract should not be longer than 5 pages (excluding supporting documents).

### **Project Proposal**

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

- 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.

8.8 Additional guidance on completing Applications are as follows:

a) Roles and Responsibilities. The roles and responsibilities of every Institution, 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) Proposed solution. Project Teams are expected to articulate in detail their proposed solution and will be expected to test-bed the proposed solution at the implementation phase if awarded the Grant. The Project Teams shall remain accountable for the safety and well-being of human subjects during the course of the Research and be responsible for the submission of any applications required for ethics approval, if necessary.

c) Implementation Plan. Project Teams are required to describe all implementation activities, stages, Milestones and targets.

d) Computation of KPIs. Project Teams are required to state the baseline and target KPIs by phases as elaborated in clause 7.4 above based on the following indicators.

Key Area	KPI
<i>Project Teams are to address KPIs 1 and/or 2 depending on the choice of Research in response to the Challenge Statement. KPIs 3 and 4 are compulsory.</i>	
<b>KPI 1:</b> Appropriate and efficient identification of pre-frail and frail seniors	Project teams should use an evidence-based assessment that could be used in the community and validated in the local context; <u>OR</u> develop an appropriate and efficient way to identify pre-frail or frail seniors.
<b>KPI 2:</b> Reduce the risk, Delay and/or Decelerate the Progress of Physical Frailty	Project teams are to demonstrate any of the following measures by tracking appropriate frailty measures(s) pre-and post-intervention;  a) Reduction in the risk or a delay in the onset of physical frailty in pre-frail seniors; <u>OR</u> b) Decelerating the progress of physical frailty.  <u>Possible KPIs may include:</u>  <i>Prevent/Delay onset of physical frailty</i> <ul style="list-style-type: none"> <li>• Maintenance or improvement of function in pre-frail seniors (e.g. grip strength, balance or ability to rise from a sitting position unassisted)</li> </ul>

Key Area	KPI
<i>Project Teams are to address KPIs 1 and/or 2 depending on the choice of Research in response to the Challenge Statement. KPIs 3 and 4 are compulsory.</i>	
	<p><i>Decelerate progress of physical frailty</i></p> <ul style="list-style-type: none"> <li>• Reduction in falls and/or fractures. Project Teams may compare with baseline or a control group</li> <li>• Reduction in polypharmacy for frail seniors as compared to baseline</li> <li>• Delaying the onset of disabilities for frail seniors as compared to a control group</li> <li>• Reduction in healthcare utilisation as compared to baseline or a control group</li> <li>• Reduction in institutionalisation as compared to a control group</li> </ul>
<u>KPI 3: Cost-Effectiveness</u>	Project Teams are to demonstrate that the proposed intervention or solution is <u>cost-effective</u> .
<u>KPI 4: Quality</u>	<p>Project teams are to propose <u>at least two clinical/client KPIs</u> to track. Possible clinical / client KPIs can include:</p> <ul style="list-style-type: none"> <li>• Formal or informal caregiver burden (e.g. Reduction in caregiving hours required by care recipient as compared to baseline)</li> <li>• Customer compliance to programme</li> <li>• Improvement in chronic disease management (e.g. control of diabetes mellitus)</li> <li>• Improvement in functional, physiological, emotional, behavioural and/or cognitive wellbeing as measured by appropriate tools</li> </ul>

e) Budget. Project Teams are required to articulate the **total required resources and budget** to implement their Research. Qualifying costs include developmental costs as described in clause 7.1(a) and operating costs as described in clause 7.1(b). 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 failed to exercise due diligence in budgeting.

f) 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.

## Other Things to Note

8.9 All information submitted pursuant to the Healthy Ageing Innovation Grant including supporting technical data and applicable documentation must be in the English language.

8.10 The following Applications will be rejected:

- a) Incomplete Applications, e.g. missing literature review, missing documents, missing signatures, sections left blank and missing CVs, etc.; and
- b) Inappropriate submission template used.

8.11 Project Teams should ensure that all information contained in the Applications and any other information submitted to the Grantor relating to the Healthy Ageing Innovation Grant is complete, accurate and not misleading. The Grantor reserves the right to reject any requests for additional funding or any changes in the Research or requested funding after the Project Proposal has been submitted to the Grantor.

## EVALUATION AND AWARD

### Evaluation

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

9.2 Shortlisted Project Teams may be required to present their Research (at their own cost and expense) and answer questions from the evaluation panel. 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"><li>• Proposal Submission</li><li>• Locally-Based Project &amp; Lead Principal Investigator</li><li>• Team Composition</li><li>• Address Challenge Statement</li></ul>
General	<ul style="list-style-type: none"><li>• Background of Lead Principal Investigator</li><li>• Track record</li></ul>
Impact and Outcomes	<ul style="list-style-type: none"><li>• Impact</li><li>• Cost-effectiveness of the proposed solution</li><li>• Proposed outcomes / KPIs</li><li>• Scalability and sustainability of proposed solution</li></ul>

Component	Evaluation Criteria
Innovativeness	<ul style="list-style-type: none"> <li>Innovativeness of proposed solution</li> </ul>
Implementation	<ul style="list-style-type: none"> <li>Research feasibility and adoption in the local context</li> <li>Reasonableness of funding request</li> </ul>

9.4 The evaluation panel reserves the right to reject any or all Applications submitted for the Healthy Ageing Innovation Grant, 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 Host Institution, 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.

### Progress and Final Reports

9.7 Awarded Project Teams will be required to submit to the Grantor annual progress reports as stated in the Letter of Award in relation to all Research-specific KPIs, the progress of the Research implementation and any challenges that may impede progress.

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 Healthy Ageing Innovation Grant is set out below.

Activity	Date
Call for Applications	22 May 2017 (Mon)
Public Briefing	29 May 2017 (Mon)
Deadline for Project Abstract Submission	14 July 2017 (Fri)

Deadline for Submission of Project Proposal	22 September 2017 (Fri), or as otherwise specified by the Grantor in the invitation email
Evaluation and Moderation Process	October 2017 – December 2017
Announcement of Results	By end FY2017

## CONTACT DETAILS

11.1 Any enquiries regarding the NIC and/or the Healthy Ageing Innovation Grant should be emailed to [NIC\\_Ageing@MOH.gov.sg](mailto:NIC_Ageing@MOH.gov.sg).