



NHMRC TARGETED CALL FOR RESEARCH

FRAILITY IN HOSPITAL CARE: COMPLEX HEALTH CARE

These Call-Specific Funding Rules must be read in conjunction with the *2018 Targeted Call for Research Funding Rules for NHMRC's Targeted Calls for Research Program* and the *2018 NHMRC Funding Rules*. These documents will be available when the call opens on 31 October 2018.

1 Background and Justification for the Call

Australia's population is much older today than it has been in the past. The proportion of elderly people aged 65 and over in the Australian community has increased over the last five decades from 8% (50,100) in 1964 to 15% (3.7 million) in 2016¹. In addition, there has been a ninefold increase in the number of people aged 85 with 498,250 people (2% of the population) in this age group in 2017². The life expectancy for women is now 87 years compared with 84 years for men³.

As the population ages, the numbers of people with complex chronic illness in the community is expected to increase significantly. This creates a disproportionate burden on hospitals and health services and is associated with longer inpatient stays and poorer outcomes for patients and families. Between 2012–13 and 2016–17, hospitalisations for people aged 65 to 74 years increased by an average of 6.3% each year, faster than the population growth for this age group (4.1% each year over the same period). For people aged 85 years and over, hospitalisations increased by an average of 5.0% each year, faster than the population growth for this age group (3.5% each year)⁴.

Frailty is a multifactorial syndrome associated with functional impairment and increased susceptibility to disease, disability and mortality that can occur at any age. Frailty increases with age: 15.7% of adults aged 80–84 years were identified as frail compared with 26.1% of those aged 85 years and over⁵. Frailty is very common in Australian acute geriatric medicine inpatients (approximately 90%)⁶.

There are many validated tools to measure frailty as a clinical syndrome or phenotype. The most well-known and widely used phenotypic tool is the Fried model which defines someone as frail if they meet 3 or more of 5 criteria: weight loss, exhaustion, weak grip strength, slow walking speed and low physical activity. The multidimensionality

¹ Australian Institute of Health and Welfare <https://www.aihw.gov.au/reports/older-people/older-australia-at-a-glance/contents/demographics-of-older-australians/australia-s-changing-age-and-gender-profile> (Accessed 29 August 2018).

² [ABS 2017. Australian Demographic Statistics, Dec 2017. Cat. no. 3101.0. Canberra: ABS.](#) (Accessed 20 August 2018).

³ Australian Institute of Health and Welfare <https://www.aihw.gov.au/reports/life-expectancy-death/deaths-in-australia/contents/life-expectancy> (Accessed 20 August 2018).

⁴ Australian Institute of Health and Welfare <https://www.aihw.gov.au/reports/hospitals/ahs-2016-17-at-a-glance/contents/table-of-contents> (Accessed 22 August 2018).

⁵ [Collard RM, Boter H, Schoevers RA, Oude Voshaar RC. Prevalence of frailty in community-dwelling older persons: a systematic review. J Am Geriatr Soc 2012;60:1487-92.](#)

⁶ [Basic D, Shanley C. Frailty in an older inpatient population: using the clinical frailty scale to predict patient outcomes. J Aging Health 2015;27:670-85.](#)

of frailty is embraced by tools such as the Edmonton Frailty Scale which derives a maximum score of 17 from assessments across 10 different domains⁷.

Whilst measures of frailty within hospital setting are being developed as screening tools, how these tools are applied for treatment decisions is poorly defined and the impact of the term "frailty" on health consumers is not well considered. There is increasing recognition of frailty as a continuum rather than an "all or none" phenomenon and the optimal time to intervene (e.g. pre-frail or frail) remains unclear.

In hospitals, evidence indicates that frailty predisposes elderly to delirium and functional decline, which mediate poor hospital outcomes; longer stays, continuing care need, and mortality^{8, 9}. Geriatric "post-hospital syndrome" is characterised by delayed recovery from functional, cognitive and nutritional decline. This may be addressed in frail elderly through more intensive multi-component interventions early after discharge.

There is some evidence that physical activity and multicomponent interventions can reduce frailty in people within the community¹⁰. However, there is little empirical evidence that changes in physical performance translate into meaningful changes in daily activities, disability, quality of life, hospitalisations or mortality, and whether this improvement in physical function is confined to frail and/or "pre-frail" individuals (i.e. a treatment effect on frailty per se).

Frailty in combination with cognitive impairment is associated with adverse health outcomes including depression and anxiety. The Australian Commission of Safety and Quality in Health has mandated hospitals to incorporate assessment of delirium/cognitive impairment/recent changes in mental state and the subsequent management of these conditions. However, current evidence for the benefits of post-hospital disease management programs by frailty status and ongoing holistic care needs is limited. It is also unclear if cognitive frailty requires the co-existence of physical frailty.

In addition to the evidence gaps above, other areas where evidence gaps exist include:

- The meaning and implications of frailty (physical and cognitive) within the hospital setting (patient, family and health perspectives).
- The reciprocal relationships between hospitalisation and levels of frailty in the community;
- Influence of levels of frailty on clinical decision making processes and impact on health outcomes.
- Utility and value of multi-disciplinary hospital-based and post-discharge interventions to support recovery from acute illnesses and enhance cognitive and physical function in frail patients.

2 NHMRC Aims in Implementing this Call

Aims of implementing the call are to:

1. Encourage research across a range of disciplines and sectors to generate evidence for new or improved interventions and models of care to improve hospital outcomes and well-being of patients with frailty within elderly or other affected age groups.
2. Promote and advocate for the accelerated translation of evidence-based interventions including increasing the uptake of already existing evidence-based approaches to community, residential and hospital care settings and organisational and government policies, to improve hospital outcomes and well-being of patients with frailty within elderly or other affected age groups.
3. Encourage research that develops tools to identify risk factors for 'becoming frail' to allow earlier decision making on treatment options for effective and cost effective models of care.

⁷ Australian and New Zealand Society for Geriatric Medicine, Position Statement No 22, Frailty in Older People <https://www.clinicalguidelines.gov.au/portal/2306/australian-and-new-zealand-society-geriatric-medicine-position-statement-22-frailty>

⁸ D. B. Hogan et al. A Scoping Review of Frailty and Acute Care in Middle-Aged and Older Individuals with Recommendations for Future Research *Can Geriatr J* 2017; 20 (1) 22-37.

⁹ J. George, I. Sturgess, S. Purewal, H. Baxter, (2007) "Improving quality and value in healthcare for frail older people", *Quality in Ageing and Older Adults*, Vol. 8 Issue: 4, pp.4-9.

¹⁰ Puts et al. Interventions to prevent or reduce the level of frailty in community-dwelling older adults: a scoping review of the literature and international policies; *Age and Ageing* 2017; 46: 383-392.

4. Build Australia's capability for research into the health and well-being of frailty within elderly or other affected age groups.

This call for research aligns with the NHMRC's strategic priorities and key activities, as outlined in the [NHMRC Corporate Plan 2018-19](#), including:

- create knowledge and build research capability through investment in the highest quality health and medical research and the best researchers; and
- drive the translations of health and medical research into clinical practice, policy and health systems and the effective commercialisation of research discoveries

Quality evidence generated from research will allow for better planning, funding and implementation of policies and services to improve outcomes for frail Australians within elderly or other affected age groups.

3 Definition and scope

This TCR aims to support research that addresses the following question: *How can frail persons be supported to safely avoid hospitalisations, receive optimal care when admitted and achieve the best health recovery outcomes through integrated and coordinated in- and post-hospital interventions?*

NHMRC invites proposals for collaborative and multidisciplinary research, to avoid duplication of effort and to develop synergies between researchers, clinicians and health systems (community, residential and hospital care settings).

Research not supported under this call

This call for research does not support:

- Sociological research into attitudes of health service providers or perceived discrimination.
- Research based entirely overseas (out of Australia).
- Research projects that have any laboratory-based research, including animal-based research or research based on animal models.

4 Objectives to be addressed in the Research Proposal

The information below is additional guidance on call-specific details to include in components of the Research Proposal. Refer to Section 4.2 B-GP Grant Proposal in the *Targeted Call for Research Scheme-Specific Advice and Instructions* for a full description of Grant Proposal requirements.

Applications are invited that address one or more of the following questions:

1. How should frailty (physical and/or cognitive) shape assessment, decision-making, treatment, and restorative strategies for people at different levels of, and conditions predisposing to, frailty within the home, community and/or hospital setting?
2. What strategies and interventions are effective in managing frail people at home or in the community, to avoid hospitalisations?
3. What strategies and interventions are effective in minimising/limiting the development of frailty within the home, community and/or hospital setting?
4. What is the impact of interventions on outcomes that matter to frail and pre-frail patients when they suffer from an acute illness, accident or trauma, or require a significant intervention such as surgery?
5. What integrated and coordinated in- and post-hospital interventions can support frail persons to achieve the best possible health recovery outcomes?
6. What are the barriers and enablers to good care for frail people within the home, community and/or hospital setting?

The methods to address these questions could be qualitative, mixed methods studies: observational studies of outcomes in frail and non-frail participants; empirical studies stratified by frailty of the benefits of continuity of care;

and longitudinally pragmatic trials within hospital and the community settings. Exploration of links to primary care, including GPs, and community assessment options, especially aged-care assessment teams will be required.

NHMRC requires community and consumer participation in the planning, conduct and reporting of the research in applications for this TCR. A patient-centred approach with early end user engagement is recommended to provide the frail patients in the community, residential and hospital care settings and their families' with opportunities to inform research design, including engagement with primary care. The applicant team will be expected to include in their application, details on how they expect to achieve these requirements and this will be taken into account when reviewing the application. Further information on consumer and community engagement can be found at [Statement on Consumer and Community Participation in Health and Medical Research \(the Statement on Participation\)](#).

5 Expected outcomes

It is expected that one or more of the following outcomes will be achieved by each of the funded grants:

- To support best practice and novel patient-centred models of care that support frail people to remain at home and avoid hospitalisations and/or facilitate/support a return to independent living.
- To provide evidence that improves hospital outcomes and well-being of patients with frailty within elderly or other affected age groups.
- To provide innovative and evidence-based ways to support cost effective, scalable and pragmatic community based programs that reduce the medical, social and financial burden of frailty on the hospital, primary health and community sectors.

6 Budget

Up to \$5 million has been allocated to support a small number of research projects identified via this call. Funding will be provided to the top ranked applications until the allocated funding is expended. The number of projects funded therefore depends on the size of the grants.

Funding will be available for any period of up to five years over the period 2019-2023. Applications must clearly justify the requested duration and budget and how it will support the proposed outcomes of the research. The Grant Review Panel will consider the information and may adjust the grants duration and budget to ensure the research can be achieved while ensuring value for money.

NHMRC reserves the right not to expend the amount allocated to this TCR if, in the assessment of the independent expert grant review panel, applications of sufficient quality are not received.

7 Critical Dates

Process	Date
Open for Submissions in RGMS	31 October 2018
Minimum data due in RGMS*	16 January 2019
Close of Submissions in RGMS	30 January 2019
Completion of Peer Review	May 2019

*Minimum data must be entered into NHMRC's research grants management system (RGMS) by **5.00 pm** AEST on the specified due date to allow the NHMRC to start sourcing suitable assessors. Applications that fail to satisfy this requirement will not be accepted. Applicants are also reminded to complete the recommended fields with correct information. Using placeholder text such as "text", "synopsis" or "xx" etc. is not acceptable as minimum data.

Minimum data for NHMRC TCRs consist of the following:

- General – Application Information: You must complete fields for Administering Institution, Application Title, Synopsis, Aboriginal/Torres Strait Islander Research (yes/no) and Consent to provide information to International Assessors
- A-RC Research Classification
- A-RT Research Team (Chief Investigator (CI) team with other members listed as TBA, if not yet known).

Please note: Failure to meet this deadline will result in the application not proceeding (see section 10.7 of the *2018 NHMRC Funding Rules* for further information).

Research Administration Officers (RAOs) are not required to certify applications for the purpose of minimum data; applications should only be certified once complete and ready for submission (see section 10.4 of the *2018 NHMRC Funding Rules* and section 6 of the *2018 NHMRC Advice and Instructions to Applicants*).

Completed applications must be submitted to the NHMRC in RGMS by **5.00 pm** AEST on the specified closing date. Late applications will not be accepted.

8 Assessment of Applications

Applications will be assessed by peer review against the following criteria:

1. Scientific quality and relevance to successfully delivering the expected outcomes of the TCR (60%), and
2. Record of achievement of the Chief Investigator team in areas/disciplines relevant to this TCR – relative to opportunity (40%).

Assessment of applications will include the following considerations:

- Relevance of the scientific approach to the scope, aims and objective of the call.
- Incorporation of patient/consumer involvement in the proposed research.
- Strengths and weaknesses of the research design.
- Appropriateness and robustness of the technical and methodological aspects.
- Suitability and calibre of the team to ensure delivery of the TCR, relative to opportunity (outlined in the *2018 NHMRC Funding Rules* at section 6.2) and recognising applicant's industry relevant expertise (outlined in the *2018 NHMRC Funding Rules* at section 6.1) and relevant career disruptions (outlined in the *2018 NHMRC Funding rules* at section 6.2.1).
- Likelihood of successfully completing the proposed research.

Further information on the scoring of applications against the category descriptors is available at [Attachment A](#).

9 Additional Reporting Requirements

Researchers will be required to submit an annual progress report outlining the achievements and progress against the aims of the initiative, which NHMRC may publish on its website.

This requirement is in addition to the general requirements set out in the [NHMRC Funding Agreement](#), section 12 of the *2018 NHMRC Funding Rules*, and on the [NHMRC website](#).

Attachment A: NHMRC Targeted Call for Research Category Descriptors

The following category descriptors are used to assess an application. Categories 1-3 are considered non-competitive and will not be funded ('unfunded'). Categories 4-7 are potentially fundable, subject to the availability of resources.

Category	<i>Scientific Quality and Relevance to Successfully Delivering the Expected Outcomes of the TCR (60%)</i>	<i>Record of Achievement of the Team in Areas/Disciplines Relevant to this TCR – relative to opportunity (40%)</i>
7 Outstanding	<p>The research proposal:</p> <ul style="list-style-type: none"> • is highly relevant to the call • is without question, highly feasible and will successfully achieve the expected outcomes of the call • has objectives that are well-defined, highly coherent and strongly developed • has a near flawless design • has very comprehensive strategies for performance measures/milestones and how grant funds and other resources will be shared, deployed, and redeployed • will provide very high quality evidence that addresses the expected outcomes of the call • is highly likely to result in improved outcomes for patients • is highly competitive with the best comparable research proposals internationally • is highly likely to be translated into or inform changes in policy or health practice • will almost certainly result in highly influential publications • is highly integrated with consumers in every aspect of the project 	<p>The applicant team:</p> <ul style="list-style-type: none"> • has a track record that specifically targets the proposed research both in terms of depth and breadth • has all the required skills and expertise to successfully achieve the expected outcomes • has a multi-site national team, with an outstanding nation-wide approach that is collaborative and multidisciplinary • is highly networked with international alliances to exchange knowledge and skills
6 Excellent	<p>The research proposal:</p> <ul style="list-style-type: none"> • is very relevant to the call • is highly feasible and is highly likely to achieve the expected outcomes of the call • has objectives that are clear, logical and well developed • is excellent in design • has comprehensive strategies for performance measures/milestones and how grant funds and other resources will be shared, deployed, and redeployed • will provide high quality evidence that addresses the expected outcomes of the TCR 	<p>The applicant team:</p> <ul style="list-style-type: none"> • has a track record that is highly relevant to the proposed research in terms of depth and breadth • has all the required skills and expertise to successfully achieve the expected outcomes • has a multi-site national team, with an excellent nation-wide approach that is collaborative and multidisciplinary • is well networked with international alliances to exchange knowledge and skills

	<ul style="list-style-type: none"> • is very likely to result in improved outcomes for patients • is very likely to be competitive with strong comparable research proposals internationally • is very likely to be translated into or inform changes in policy or health practice • is very likely to result in highly influential publications • is well integrated with consumers in most aspects of the project 	
5 <i>Very Good</i>	<p>The research proposal:</p> <ul style="list-style-type: none"> • is relevant to the call • is likely to be feasible and is likely to achieve the expected outcomes of the call • has objectives that are clear and logical • raises a few minor concerns with respect to the study design • has clear strategies for performance measures/milestones and how grant funds and other resources will be shared, deployed, and redeployed • will provide some high quality evidence that addresses the expected outcomes of the TCR • is likely to result in improved outcomes for patients • may not be highly competitive with comparable research proposals internationally • may be translated into changes in or inform policy or health practice • may result in several influential publications • is integrated with consumers in some aspects of the project 	<p>The applicant team:</p> <ul style="list-style-type: none"> • has a track record that is very relevant to the proposed research in terms of depth and breadth • has most of the required skills and expertise to successfully achieve the expected outcomes • has a multi-site national team, with a very good nation-wide approach that is collaborative and multidisciplinary • is networked with international alliances to exchange knowledge and skills
4 <i>Good</i>	<p>The research proposal:</p> <ul style="list-style-type: none"> • is somewhat relevant to the call • raises some concerns regarding feasibility and likelihood to achieve the expected outcomes of the call • has objectives that are clear • raises some concerns regarding the study design • has some strategies for performance measures/milestones and how grant funds and other resources will be shared, deployed, and redeployed 	<p>The applicant team:</p> <ul style="list-style-type: none"> • has a track record that is consistent with the proposed research in terms of depth and breadth • has some of the required skills and expertise to successfully achieve the expected outcomes • has a multi-site national team, with a nation-wide approach that is collaborative and multidisciplinary • is somewhat networked with international alliances to exchange knowledge and skills

	<ul style="list-style-type: none"> • will provide some evidence that addresses the expected outcomes of the TCR • may result in improved outcomes for patients • is not likely to be competitive with similar research proposals internationally • may be translated into changes in or inform policy or health practice • may result in some strong or influential publications • is somewhat integrated with consumers in minor aspects of the project 	
3 Marginal	<p>The research proposal:</p> <ul style="list-style-type: none"> • is not particularly relevant to the call • raises several concerns regarding feasibility and likelihood to achieve the expected outcomes of the call • is somewhat unclear in its' objectives • raises several concerns regarding the study design • has superficial consideration of strategies for performance measures/milestones and how grant funds and other resources will be shared, deployed, and redeployed • may provide limited evidence that addresses the expected outcomes of the TCR • is unlikely to result in improved outcomes for patients • is not competitive nationally or internationally • unlikely to be translated into changes in, or inform policy or health practice • may result in some modestly influential publications • is marginally integrated with consumers in the project 	<p>The applicant team:</p> <ul style="list-style-type: none"> • have limited track records in the field of the proposed research • has minimal skills and expertise required to successfully achieve the expected outcomes • does not have a multi-site national team, or a nation-wide approach that is collaborative and multidisciplinary • is marginally networked with international alliances to exchange knowledge and skills
2 Unsatisfactory	<p>The research proposal:</p> <ul style="list-style-type: none"> • raises several major concerns regarding feasibility and likelihood to achieve the expected outcomes of the call • is unclear in its' objectives • raises several major concerns regarding the study design • has no shared budget, some evidence of shared resources, no consideration of how grant funds and other resources will be shared, deployed, and redeployed • is poorly relevant to the call 	<p>The applicant team:</p> <ul style="list-style-type: none"> • have track records which do not relate well to the proposed research • is deficient in many of the required skills and expertise to successfully achieve the expected outcomes • does not have a multi-site national team, or a nation-wide approach that is collaborative and multidisciplinary • is poorly networked with international alliances to exchange knowledge and skills

	<ul style="list-style-type: none"> • is not competitive nationally or internationally • unlikely to provide evidence that addresses the expected outcomes of the TCR • is very unlikely to result in improved outcomes for patients • very unlikely to be translated into changes in or inform policy or health practice • unlikely to result in influential publications • is poorly integrated with consumers in the project 	
1 Poor	<p>The research proposal:</p> <ul style="list-style-type: none"> • contains a research plan that does not seem to be feasible and is unlikely to be successfully completed • is very unclear in its' objectives. • contains a study design that is not adequate • has no shared budget, no evidence of shared resources, no consideration of how grant funds and other resources will be shared, deployed, and redeployed • is not relevant to the call • is not competitive nationally or internationally • very unlikely to provide evidence that addresses the expected outcomes of the TCR • is highly unlikely to result in improved outcomes for patients • no potential to be translated into changes in or inform policy or health practice • very unlikely to result in influential publications • does not involve consumers 	<p>The applicant team:</p> <ul style="list-style-type: none"> • do not have relevant track records in the field of the proposed research • is deficient in most of the required skills and expertise to successfully achieve the expected outcomes • does not have a multi-site national team, or nation-wide approach that is collaborative and multidisciplinary • is not networked with international alliances