ACvA Frailty & Heart Failure Workshop 1
Meeting Summary

Setting the Scene: Challenge posed by Frailty and Heart Failure in Australia (Peter Macdonald & Trish Davidson, Julee McDonagh & Caleb Ferguson)

More than half of all patients with heart failure are affected by frailty. Together, these two syndromes compound each other, leading to worse outcomes. In many cases, frail patients with heart failure are not receiving guideline-based medical treatments for heart failure due to increased perceived risk of adverse health outcomes. The emerging phenomenon of multimorbidity underscores the importance of reviewing models of care.

"Advanced frailty in heart failure is not end-stage heart failure and doesn't mean you don't receive evidence-based care". **Professor Peter Macdonald**

There is an urgent need to transition the treatment approach for patients with frailty and heart failure from a single disciplinary focus to an integrated multidisciplinary care approach, thereby transforming healthcare practices. The absence of evidence-based care models and treatment for frail patients with heart failure is partly attributed to the routine exclusion of the aged and frail from clinical trials. Barriers to address include the imperative to ensure evidence-based treatment and tackle issues related to stigma, bias and misperceptions that older and frail patients are not interested in 'active' treatments and interventions.

"*The issues facing the health systems in the 1980s remain the same today - communication, accessibility, equity, health literacy, and transportation*". Professor Trish Davidson.

Frailty is defined in a clinical context as a reduced ability to recover from acute stressors due to a decline in multiple physiological systems. While it's often associated with aging, it can also occur in younger individuals with chronic health conditions. Frailty increases the risk of adverse outcomes such as falls, disability, hospitali ation, and mortality. Importantly, frailty can be treated and improved through exercise, nutrition, social engagement and support networks, and optimised medication use.

Frailty serves as an independent predictor of mortality for heart transplant patients. While both the ESC and CSANZ Heart Failure guidelines recommend assessment of frailty, this is not routinely implemented.

"There is currently no consensus when we should measure frailty or what tool we should use". **Dr Julee McDonagh.**

The spectrum of the frailty syndrome spans from non-frail to having significant disability. Assessing frailty is crucial for identifying individuals who may benefit from interventions to improve their overall well-being and reduce the risk of adverse health outcomes. There are many instruments used in clinical practice and research to assess frailty. One commonly used tool is the Fried Frailty Phenotype, which includes criteria such as unintentional weight loss, self-reported exhaustion, weakness, slow walking speed, and low physical activity. Other tools may focus on broader aspects, including cognitive function, social support, and nutritional status. To date, there is no consensus on the use of a standardised frailty screening tool leading to inconsistent and varying diagnoses of frailty.

Evidence suggests that high-risk, frail heart surgery patients may benefit from "prehabilitation", however these programs are not widely implemented. The overarching goal of prehabilitation is to reduce postoperative complications, hospital length of stay, and ideally, improve the transition from the hospital

back home. However, there is currently no formal consensus on what prehabilitation should involve, nor its core components.

In this workshop, we focussed on five topics areas that included:

- Biology of aging and frailty
- Routine screening of frailty
- Frailty focussed and cardiogeriatric models of care
- Prehabilitation for frailty and heart failure patients
- Multidisciplinary management approaches

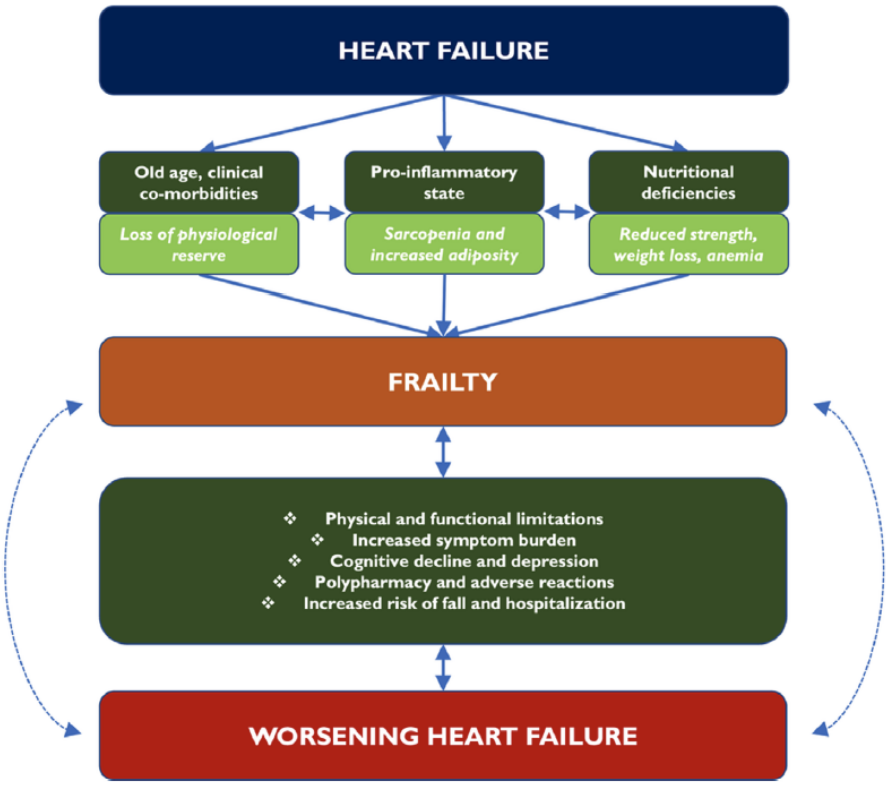


Figure 1 A pictorial illustration of the relationship between heart failure and frailty and how frailty in heart failure leads to worse outcomes.

Reference: Talha *et al* 2023 Journal of Cachexia, Sarcopenia and Muscle 2023 **14**: 1959-1972

Topic Discussions

For each topic there was an expert Chair, who was tasked with setting the scene and leading the discussion. All speakers were asked to consider "what do we know, what don't we know and where we could go?". A summary of the key discussions from the five topics is provided below.

1. **Biology of aging and frailty** (Lindsay Wu)

Ageing is caused by the accumulation of cellular and molecular damage over time. This gradual process leads to a reduction in physical and mental capacity and a growing risk of disease (WHO 2021).

- On a cellular level – aging results in loss of stem cells, cell senescence, and mitochondria dysfunction

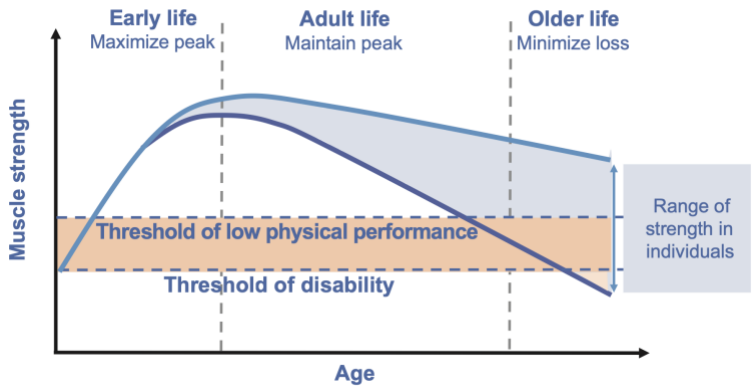
- On a system level – aging results in liver fat accumulation, cardiovascular decline, respiratory decline, cognitive decline, sensory decline, muscle weakness, bone weakness, skin thinness.

- Studying the biology of aging require the use of age-appropriate models for example mice models need to be matched to human aged equivalents.

- Age should be considered a primary risk factor in the disease of interest, with a research focus on studying a hallmark of aging and the use of age-appropriate models.

- Sarcopenia (muscle loss) begins from mid-life.
    - Muscle strength is a functional biomarker of sarcopenia/frailty
    - The rate and severity of sarcopenia can be modified

- Sarcopenia can be delayed by life style interventions (physical activity & diet) and accelerated by inactivity, inflammation and oxidative stress.
- Inactivity leads to rapid acceleration of frailty



Rate and severity of sarcopenia can be modified through physical activity.
Ref: Cruz-Jentoft, AJ et al. (2019) Age and Ageing 48: 16-31.

2. Routine Screening for Frailty (Ruth Hubbard)

What do we know?

- Frailty can be seen as the reduced physiological resistance to insult.
- Frailty is a spectrum not a dichotomy
- There are four pillars that contribute to the progression of frailty:
    - Exercise
    - Nutrition
    - Social engagement
    - Medication optimisation

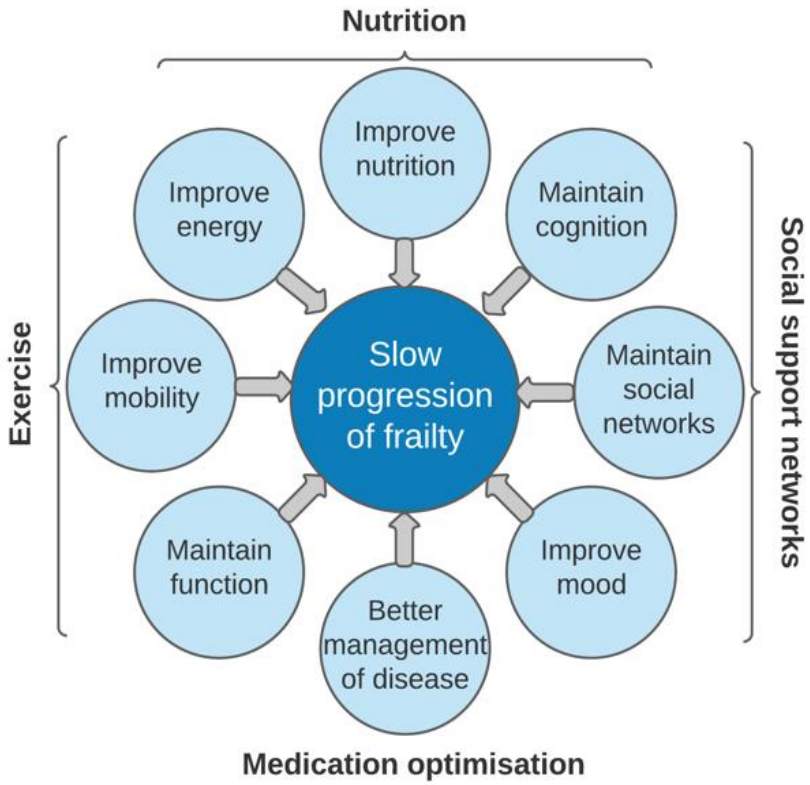


Figure 1. Intervention targets for frailty

How can frailty be measured?

- There are extensive tools in the literature that are used to measure frailty in the clinic and in research. The most common and best validated frailty screening tools are the:
  - Clinical Frailty Scale
  - Fried Frailty Phenotype (FFP)
  - Frailty Index (FI)

- While the FFP is a very well validated tool, it is only a measure of your physical condition and does not include the state of your mental cognition.
- The Frailty index acknowledges that frailty is a multidimensional disorder and measures deficit accumulation. The more deficits accumulated the more likely that person is to be frail. Deficits are measured by quantity rather than by the nature health problems. Various disorders are accumulated by individuals during their lives. Deficits can be symptoms, signs, diseases, disabilities, abnormal laboratory results. When you measure using the Frailty index you need a minimum of 30 variables.
- Frailty index provides a baseline measure of frailty. Some, but not all deficits in the index can improve with interventions.
- What clinicians are interested in measuring may not align with what is important to consumers. Consumers are most concerned about how frailty relates to outcomes and the ability to live independently.
- The group agreed that going forward all studies should adopt the use of both FFP and FI to ensure interoperability and completeness.

DOMAINS	DISABILITY	MOBILITY	PHYSICAL FUNCTION	COGNITION	MOOD	SOCIAL SUPPORT	NUTRITION	CO-MORBIDITIES	MEDS	HEALTH STATUS	AGE
Fried phenotype		+	+				+			+	
Frailty index	+	+	+	+	+	+	+	+	+	+	
Edmonton Frailty Scale	+	+	+	+	+	+	+		+	+	
Clinical Frailty Scale	+	+	+	+							
FRAIL scale		+	+				+	+		+	
VES-13	+		+							+	+
Tilburg		+	+	+	+	+	+	+		+	
Groningen		+	+	+	+	+	+		+		

Figure. Examples of frailty screening tools and what they measure.

3. Frailty focussed and cardiogeriatric models of care (Sarah Hilmer & Richard Lindley)

Clinical Pharmacology of Frailty and Heart Failure (Sarah Hilmer)

What we know

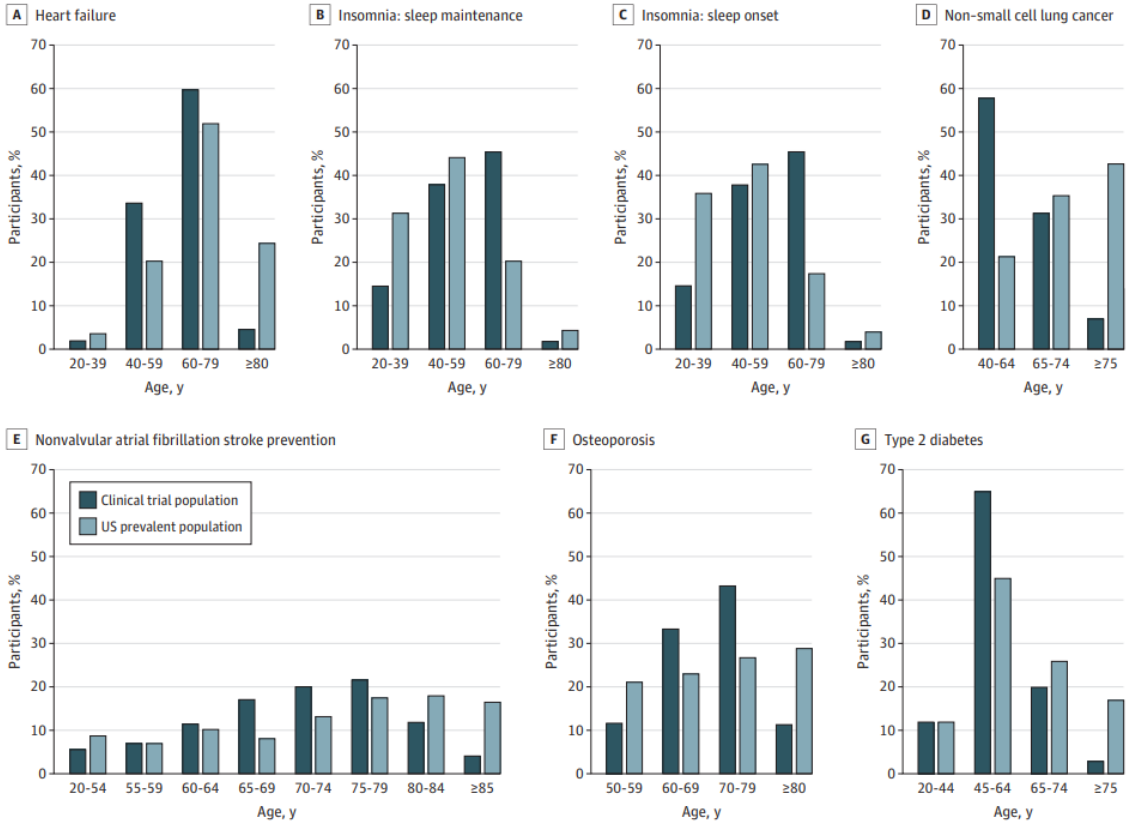
- The use of multiple medications (polypharmacy, defined as > 5 medicines) is common in patients with heart failure and frailty. Yet, the impact and implications of polypharmacy on these patients are not well understood, raising concerns about the potential for adverse effects and interactions. More recently there has also been a focus on the appropriateness of medicines being taken/prescribed and regimen complexity for the patient

- The Drug Burden Index (developed by Hilmer) is a tool to quantify the cumulative exposure of an individual to medications with anticholinergic and sedative properties and to assess the potential burden of these medications on cognitive and physical function, especially in older populations.

What we don't know

- There is little evidence around efficacy and safety of prescribing drugs for frail older adults.
- This is due to older patients >80 yr being excluded from the recruitment criteria for drug clinical trials.
- There is little evidence on efficacy and safety of deprescribing drugs for frail older adults
- How to engage with frail older adults in decision-making around medicines use in relation to their health care goals.

Figure 1. Age Distribution of Participants in Clinical Trials Compared With Prevalence of the US Prevalent Population



Age subgrouping in the prevalence data source dictated the age group for data comparison.

JAMA Network Open. 2022;5(10):e2236149. doi:10.1001/jamanetworkopen.2022.36149 October 14, 2022 4/10

Age distribution of participants in clinical trials in New Drug Applications for Heart Failure indications to FDA 2010-2019 compared with US prevalence of Heart Failure. (Adapted from JAMA Netw Open. 2022 Oct 3;5(10):e2236149. doi: 10.1001/jamanetworkopen.2022.36149.

Opportunities and challenges

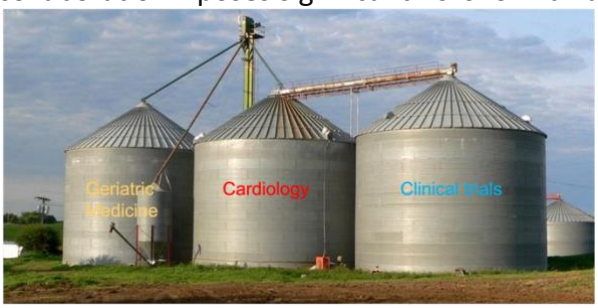
- Need to include older adults and frail people in drug clinical trials in line with the proportion of older adults in the population with the treatment indication.
- Need more complete disease prevalence data that captures the older subgroup.
- Need uniform definitions for geriatric conditions (including frailty) to measure and achieve representativeness
- Limited data on effects of different frailty measures on pharmacokinetics and pharmacodynamics
- Limited clinicals trials and evidence on deprescribing drugs in older and frail cohorts. The following trial designs have been suggested:
    - Double blind RTC
    - Hybrid implementation-efficacy
    - Piggy-back trial
    - N=1 methodology
- More research is needed across the translational spectrum to deliver high quality, evidence-based, personalised medicine for frail older people.

- Use bioinformatics to consider multiple predictors of response to polypharmacy and deprescribing
- Evaluate outcomes by frailty and heart failure phenotypes to determine benefits, risks and adherence to guideline directed medicines.

The Impact of Medical Silos on Frail Patients and the need for collaboration

Richard Lindley

- In modern healthcare, the presence of silos—specialized medical disciplines with limited collaboration—poses significant risks for frail and elderly patients. This results in cognitive biases, where each specialty tends to view patients through a narrow lens, missing the broader context of their overall health. Failure to recognize the interconnectedness of medical issues can be particularly perilous for the frail, leading to gaps in care and a lack of holistic understanding.



For example:

- **Cardiologists:** *"Anticoagulation is very safe in older people".*
  But they do not see older people with anticoagulation bleeds like fatal falls from subdural (geriatric medicine), haemorrhagic stroke (neurosurgery) or GI bleed (gastroenterology)
- **Geriatric Medicine:** *"Fatal bleeds after falls are commonly seen in the frailest older people who are anticoagulated"*.
- **Stroke physician:** *"Undertreatment with anticoagulation is very common for older people with atrial fibrillation".* As they see those who have severe ischaemic stroke
- **General Practitioner:** "*My patient finds it difficult to take/does not like to take/does not remember to take the anticoagulant – they do not understand why they need it*"

- Due to the silos, we don't know how frailty is influencing treatment, for example:
  - The ADVANCE trial (BP and glucose lowering for diabetes) retrospectively examined the effects on the frail and found:
    - BP lowering and glucose lowering benefits attenuated with increased frailty.
    - Hypoglycaemia twice as common in the frail (8.39 vs 4.80 per 1,000 patient years p< 0.001)

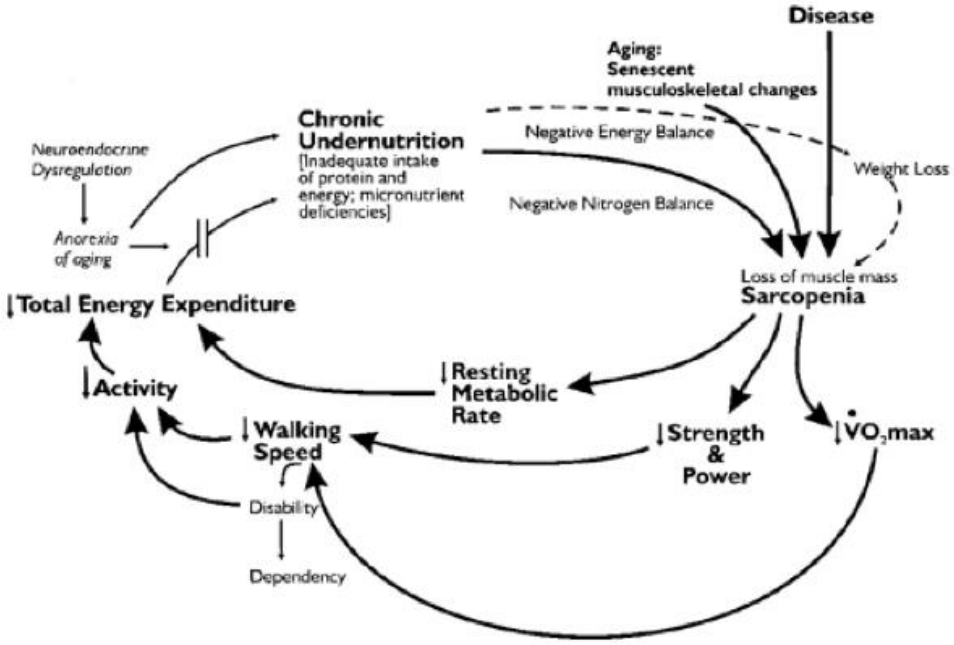
  - CANVAS Trials (Canagliflozen for those with diabetes +/- renal failure) retrospectively examined the effects on the frail and found:
    - Point estimates showed greater benefits for the frail (interaction not significant).

- Need to include older people in clinical trials but need careful phenotyping with frailty scores.
- Consumer co-design and partnership is crucial.
- Need multidisciplinary teams (cardiologists, geriatricians, nursing, primary care, neurologists, pharmacists)

4. (P)rehabilitation for frailty and heart failure patients (Andrew Maiorana)

What do we know?

- Frailty has a biological basis and exercise breaks the cycle. In particular, progressive resistance exercise that can improve muscle strength.



What don't we know?

- How can we individualise exercise according to a patient's phenotype?
- What is the optimal duration, intensity, frequency, mode of exercise?
- How do we improve the delivery of effective home-based exercise interventions?
- How can we incorporate wearables, remote monitoring, AI to deliver exercise?
- What is the role of incidental activity in frailty management?
- Is there a role for multidimensional functional assessments (combining balance, gait/mobility) in the (p)rehabilitation setting?
- How can we use functional assessments to improve patient surveillance and monitor the frailty trajectory?

Where can we go?

- We need to engage and partner with consumers and caregivers more broadly.
- Advocacy for services
- Extend the evidence base (seek funding opportunities)
- Education and professional development (e.g. integrate with primary care)
- Written guidelines
- Digital health

Multidisciplinary Approaches (Andrea Driscoll)

What do we know?

- Multidisciplinary teams (MDT) improve heart failure outcomes regardless of setting.
- MDT is recommended in HF guidelines both during hospitalisation and post-discharge.
- MDT is important in the management of HF patients regardless of the level of frailty but also more important in the management of frail HF patients.
- In frail HF patients, traditional MDT should also include (not limited to) geriatrician, social worker, Aged Care/Residential Care worker, Clinical Pharmacist, etc.

What don't we know?

- There is poor translation and implementation of knowledge into clinical practice.
- No consensus or robust frailty measure for heart failure patients (and more broadly).
- The impact of a frailty measure in clinical practice is limited. Will a frailty measure change management and treatment of HF patients?
- Would co-design of an intervention improve tool implementation?

Where can we go?

- Explore the efficacy of an alternative workforce (e.g. enrolled nurses) to work alongside HF clinicians to assist patients with navigation of health care and improving health literacy.
- Virtual wards are being implemented rapidly with minimal robust evidence to support their efficacy.
- National HF registry
- Use of exergaming in HF exercise programs. Level of intensity can be modified based on frailty.
- Use of AI to develop/provide interventions e.g. education.

5. Setting the Goal (Jamie Vandenberg)

The group discussed a possible overarching goal that is measurable and time bound.

Suggestions included:

- Halve/reduce the prevalence of frailty in HF patients by 203x (may be challenging with the aging population).
- x% of frail people with heart failure completing exercise programs (noting that concerns were raised regarding the need for a holistic approach that also includes nutrition, social engagement or medicines optimisation)
- Be independent for longer (focus on disability, independence - patient centric outcome measure)
- Support patients to live independently in the community for longer (patient-centric outcome measures)
- By 2030, reduce the prevalence of heart failure and frailty-related hospitalizations by 25% through the implementation of evidence-based prevention programs, early detection initiatives, and personalized care interventions.
- Improve the quality of life for individuals affected by heart failure and frailty by achieving a 20% increase in patient-reported outcomes related to physical function and emotional well-being.

- Reduce Hospitalisations (25% seems reasonable) focusing on evidence-based preventive programs.
- Improving Patient-Centric Outcomes; i.e physical function and emotional well-being.
- Advocacy: Work towards policy changes supporting preventive measures and comprehensive healthcare.
- Increase community awareness and education on heart failure and frailty, leading to a 30% improvement in early detection rates by 203x.
- Advocate for and achieve policy changes that support preventive measures and comprehensive healthcare for individuals at risk of or affected by heart failure and frailty.
- to increase the inclusion of older and frailer individuals in relevant clinical trials

Why

With the increasing aging population Heart Failure and frailty is an increasing problem in Australia and globally. Frailty affects over 50% of heart failure patients.

- Cognitive decline
- Cardiovascular decline
- Reduced social networks, social isolation and loneliness.
- Reduced mood & psychological impact
- Reduced mobility
- Malnutrition
- Sarcopenia
- Reduced activity
- Loss of independent living
- Hospitalisation and emergency dept visits, high healthcare utilisation
- Costs
- Reduced overall Quality of Life (this is the main metric of interest to most consumers)
- Increased medication burden

How

- Fill the research knowledge gap:
    - Support an ageing rodent colony in Australia to facilitate pre-clinical research in clinically relevant models, improving translation to practice.
    - Measure FI and FFP at baseline in all clinical trials of heart failure at baseline and as an outcome
- Routine clinical screening of all patients with HF for frailty to enable clinical interventions and quality audits.
- Adopt the principals of multimodal management that covers the four pillars of frailty (Exercise, nutrition, social support networks, optimised medications).
- Have everyone with heart failure enrolled in an exercise program.
- All research activities to adopt the use of both FFP and FI screening tools for frailty evaluation.
- Adopt the inclusion of FI and/or FFP in heart failure care plan documentation and MDT communications.
- Develop multi-disciplinary education and professional development programs.

Who

Julee McDonagh and Caleb Ferguson have agreed to be the leads.

Suggestions for others to include:

- Nutritionists and Dieticians
- Neurologists (cognition screens and increasing evidence that frailty is a risk fact for dementia)
- AI experts
- Broader CVD Community (Stroke, Heart failure, Hypertension)
- Consumers and advocacy groups
- International advisory
- Pre and rehab and digital health
- Discovery scientists
- Clinical Trialists
- Primary care (PHNs, GPs, Nursing and Allied Health)
- Industry
- Foundations, peak bodies
- Government Departments of Health (Territories, States and Federal)

Next Steps

The workshop summary will be circulated to all participants for feedback and input. A smaller group will be invited to join a pre-planning meeting for the next workshops where we aim to define the overarching goal, develop a Roadmap to the overarching goal, identify additional stakeholders and broad project plan for consideration and further input.

AGENDA

ACvA Frailty & Heart Failure Clinical Theme Workshop 1

Date: 17 November 2023
Time: 1:30 – 5:00pm
Location: Victor Chang Cardiac Research Institute, Lowy Packer Building, 405 Liverpool St, Darlinghurst NSW 2010
Teams Link: Click here to join the meeting

Facilitated by Professor Jamie Vandenberg

Time	Topic	Speaker
1:30 – 1:40pm	Acknowledgement of Country Introduction to ACvA Clinical Themes Initiatives	Jamie Vandenberg
1:40 – 2:00pm	Setting the scene: ▪ **Charting a New Course: Insights and Lessons on Transforming Healthcare Practices** ▪ **Consumer perspective** **The challenge posed by Frailty & Heart Failure** • Why we need to reduce/prevent Frailty • Impact of Frailty and HF on health more broadly (physical, psychological, social) (10m and 5m Q's)	 Patricia Davidson Peter Macdonald James Gleeson Julee McDonagh Caleb Ferguson
2:00 – 2:25pm	**Topic 1: Biology of aging and frailty** *What do we know, what don't we know, where can we go? (5 min) 20 min discussion*	Lindsay Wu
2:25 – 2:50pm	**Topic 2: Routine screening for frailty** *What do we know, what don't we know, where can we go? (5min) 20 min discussion*	Ruth Hubbard
2:50 – 3:15pm	**Topic 3: Frailty focussed and cardiogeriatric models of care** *What do we know, what don't we know, where can we go? (10min) 15 min discussion*	Sarah Hilmer and Richard Lindley
3:15 – 3:45pm	**Afternoon tea**	
3:45 – 4:10pm	**Topic 4: Prehabilitation for frailty and heart failure patients** *What do we know, what don't we know, where can we go? (5min) 20 min discussion*	Andrew Maiorana (V)
4:10 – 4:35pm	**Topic 5: Multidisciplinary management approaches** *What do we know, what don't we know, where can we go? (5min) 20 min discussion*	Andrea Driscoll (V)
4:35 – 5:00pm	**Setting the Goal(s)** • What is the vision for frailty and heart failure in Australia? • Where should we ideally be in 2030? • Identifying a common and ambitious goal • Set overall approach and decide next steps	Jamie Vandenberg

List of Invitees

Andrea Driscoll	Deakin University (Virtual)
Andrew Gilbert	Bioplatforms Australia
Andrew Maiorana	Curtin University (Virtual)
Andrew Philp	Centenary Institute
Anthony Keech	University of Sydney
Anthony Villani	University of the Sunshine Coast
Beata Bajorek	University of Newcastle
Bernie Towler	Australian Government Department of Health and Aged Care
Birdie Carr	NSW Agency for Clinical Innovation
Caleb Ferguson	University of Wollongong
Catherine Shang	ACvA
Chris Reid	Curtin University
Elsa Dent	Torrens University (Virtual)
Gursharan Singh	Queensland University of Technology
Ingrid Hopper	Monash University
James Gleeson	Consumer representative
Jamie Vandenberg	VCCRI/ACvA Board Director
John Atherton	Royal Brisbane and Women's Hospital
Julee McDonagh	University of Wollongong
Kerry Doyle	ACvA
Kim Delbaere	Neuroscience Research Australia
Lindsay Wu	University of New South Wales
Louise Hickman	University of Wollongong
Mai Duong	University of Sydney
Marc Sim	Edith Cowan University (Virtual)
Meng Hsu	ACvA
Nina Cullen	ACvA
Patricia Davidson	University of Wollongong
Peter Macdonald	Victor Chang Cardiac Research Institute
Quan Huynh	Baker Heart and Diabetes Institute
Ralph Maddison	Deakin University
Richard Lindley	University of Sydney
Ruth Hubbard	University of Queensland
Sarah Hilmer	University of Sydney
Shareen Martin	Consumer representative
Sunita Jha	University of Technology Sydney
Wesley Martin	Consumer representative