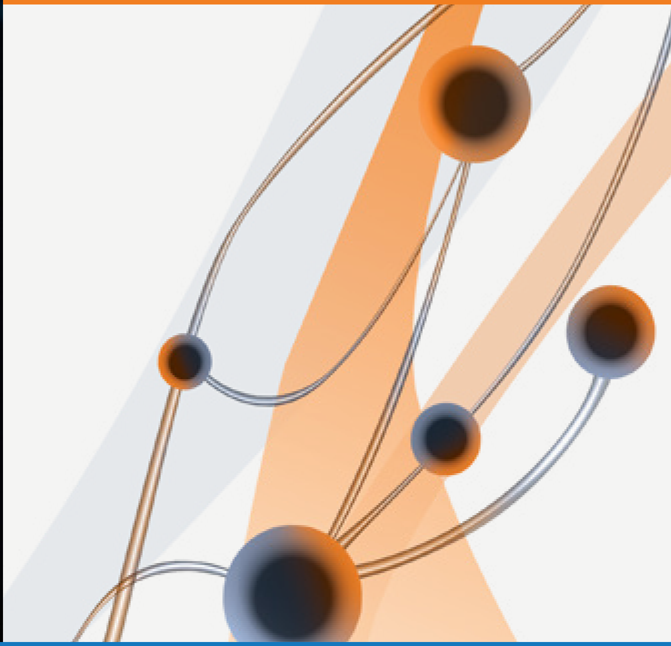


Evaluation of Preferred Investment Models for Arthritis and Musculoskeletal Research

November 2025

Arthritis
AUSTRALIA

RESEARCH
AUSTRALIA
Championing
Australian health
& medical research
& innovation

Acknowledgments

Research Australia is the national peak body for health and medical research and innovation. We use our unique convening power to position health and medical research as a driver of a healthy population and contributor to a healthy economy.

Research Australia acknowledges the traditional custodians of lands throughout Australia and their enduring connection to land, waters, skies, and knowledge systems. We pay our respects to Aboriginal and Torres Strait Islander Elders past and present and recognise the role of First Nations Australians as the first healers and story tellers of this land. We acknowledge the disproportionate health impacts experienced by First Nations Australians, and the importance of ensuring their leadership, voices, and knowledge systems are embedded in research, policy, and care.

This report has been commissioned by Arthritis Australia. We gratefully acknowledge the insights provided by all stakeholders who have shared their experiences to inform this report. These contributions were essential to understanding the opportunities and complexities of undertaking health and medical research in the current landscape.

The drafting of this report was completed by Dr Avani Yeola, Dr Talia Avrahamzon and Sarah Ticehurst. We thank contributing staff member, Nadia Levin for critical feedback on the project. We thank HTAnalysts for undertaking the cost-benefit analysis towards the health economics component of the project. We are grateful to Arthritis Australia as well as their consumer and scientific advisory panels for reviewing final iterations of the report and for their invaluable inputs throughout the project.

About Arthritis Australia

Providing information and support to people living with arthritis

Arthritis Australia is Australia's leading national arthritis charity. We work in collaboration with affiliated arthritis organisations in the ACT, New South Wales, Northern Territory, Queensland, South Australia, Tasmania and Western Australia to deliver information and support to people living with more than 100 types of arthritis.

Our vision is to achieve freedom from arthritis for the millions of Australians of all ages who currently live with arthritis and musculoskeletal conditions and for the many more who will develop these conditions in the future.

To achieve our vision, our key strategies are to provide information and support to people affected by arthritis, to fund research into better care and potential cures, and to advocate for policy and programs to ensure people with arthritis get the treatment, care and support they need.

We also work in partnership with peak health organisations, the federal government and industry to support collective goals and to seek funding to sustain our organisational purpose and activity.

Consumer Support

We provide comprehensive information resources to help people live well with arthritis and, through Affiliated state and territory arthritis organisations, deliver a comprehensive range of information, education and support services.

Research

We are the leading non-government funder of arthritis research in Australia and work in partnership with the university and medical sector to support and advocate for increased funding for research into arthritis and musculoskeletal conditions.

Advocacy

We advocate to the government and industry for policies, programs and funding for initiatives to ensure everyone facing the challenge of arthritis gets the care and support they need to live their best possible life.

Sustainability

To help fund and support our activities to achieve our organisational vision, we develop partnerships with national organisations with aligned values.

National Partnerships

We work collaboratively with Affiliated arthritis organisations and other peak health organisations to develop and deliver national programs and to support our common goals of improving the health and wellbeing of people living with arthritis.

Arthritis
AUSTRALIA

Table of Contents

List of Figures

List of Tables

Executive Summary

Arthritis Australia is at the forefront of advancing arthritis and musculoskeletal (AMSK) research in Australia and has a shared goal with the sector to establish a Medical Research Future Fund (MRFF) Mission to increase research funding and drivee better involvement and outcomes for consumers, their carers and families.

The strategic direction outlined in this report is the evolution of a multi-year partnership between Research Australia and Arthritis Australia. This foundational work is detailed in a series of three preceding reports:

1. In Report One, Understanding the Arthritis Research Landscape[1], Research Australia presented a landscape and gap analysis of arthritis research activity in Australia and of the stakeholders currently funding this research.
2. In Report Two, What Consumers Want: Identifying the unmet needs of Australians living with Arthritis[2], Research Australia identified the unmet health needs reported by those with lived experience of juvenile idiopathic arthritis, osteoarthritis, and rheumatoid arthritis.
3. In Report Three, Impactful Arthritis Research[3], Research Australia provided a series of recommendations on consolidating Arthritis Australia's role as leader in AMSK research and to enable the organisation to invest in research with translational outcomes that are of value to the consumers and communities Arthritis Australia serves.

This report builds on that body of work to define a clear, stakeholder-endorsed model for future investment.

As identified in the National Strategic Action plans for Arthritis[4] and Osteoporosis[5], there is clear need to adopt a more strategic and collaborative approach to strengthening AMSK research in Australia. A comprehensive policy landscape review, including analysis of the outcomes and learnings of existing MRFF Missions, as well as national and international research entities, identified eight potential models to support a major investment into AMSK research. Following a presentation of these findings, Arthritis Australia identified three preferred models for further investigation:

1. Research Mission funded by the Medical Research Future Fund,
2. Centre of Excellence funded by the Commonwealth Department of Health and Aged Care, and
3. Centre of Research Excellence funded by the National Health and Medical Research Council.

The three models were subsequently analysed against strategic pillars identified from several rounds of stakeholder consultations, a feasibility analysis, and an independent cost-benefit analysis, conducted by HTAnalysts. The cost-benefit analysis found that the Centre of Excellence ($1: $4.66) and MRFF Mission ($1: $4.61) generated the greatest benefit per dollar invested, followed by the Centre of Research Excellence. ($1:$4.15).

Table 1: Summary of Cost-Benefit Analysis results by Investment Model

Investment Model	**NHMRC Centre of Research Excellence**	**Department of Health Centre of Excellence**	**Medical Research Future Fund Mission**
Total Investment	$3,000,000	$25,000,000	$100,000,000
Years	5	4	10
Net benefit (NPV)	$12,438,297	$116,565,233	$460,898,318
CBR per $1 invested	$4.15	$4.66	$4.61
Net Return	$9,438,297	$91,565,233	$360,898,318

A consensus building workshop was conducted virtually on 14 August 2025. All participating stakeholders (n=19), including consumers, researchers and clinicians, identified the MRFF Mission as the preferred investment model.

This project includes a secondary investment proposal to address a specific priority within AMSK care. In recognition that women are disproportionately affected by AMSK conditions, Research Australia and Arthritis Australia propose a dedicated research entity to address critical gender inequities in AMSK research and care. Potential research streams include a national data platform, gender responsive trials, culturally responsive and safe AMSK models of care, and intersectional research programs.

On 1 September 2025, Arthritis Australia marked its 75th anniversary with an event at Parliament House in Canberra, bringing together people living with AMSK, carers, researchers, clinicians, and policymakers. The event recognised the contributions made over seven decades while highlighting the urgent need for greater investment in AMSK health. At the event, Arthritis Australia launched a communiqué calling for the establishment of a 10-year Medical Research Future Fund (MRFF) Mission to invest at least $100 million into **coordinating research, generating new evidence, and accelerating translation into lower-cost, high-value care that improves outcomes, supports recovery, and strengthens workforce participation**.

> *"When Australians hear the word arthritis, they think one thing – old age. These outdated attitudes mask the reality that arthritis and musculoskeletal conditions are complex, lifelong diseases that can strike at any age, including childhood, and affect millions of people of working age. The human toll is matched by the cost to the health system and productivity, with arthritis and musculoskeletal conditions already one of Australia's most expensive disease groups and a leading cause of lost working years.*
>
> *The price of inaction is far greater than the cost of investing now in research, prevention, and better care."*
>
> Dr David Liew, Rheumatologist and
> Arthritis Australia's Medical Director

1 Introduction

Arthritis and musculoskeletal conditions are not an inevitable consequence of ageing

Arthritis is a collective term that comprises over 100 different diseases which predominantly impact the joints, although some forms of arthritis frequently affect other parts of the body, including the skin, eyes, lungs, and cardiovascular system[6]. Arthritis and musculoskeletal (AMSK) conditions represent a collection of chronic, debilitating, and often progressive conditions affecting Australians across their life course, with major impacts on quality of life, participation, productivity, and health spending.

In 2024, AMSK conditions accounted for 13% of the total burden of disease in Australia[7]; over 4 million Australians live with Arthritis, and over 7 million live with an MSK condition[8]. These conditions are not limited to adults and older people - ankylosing spondylitis (AS), which is more likely to be diagnosed in people under 40, is estimated to affect 1 in 200 individuals[9]. The Australian Institute of Health and Welfare (AIHW) estimates around 18,500 people aged 0-24 live with Arthritis[10]; juvenile idiopathic arthritis (JIA) is estimated to affect 8,201 children and adolescents in 2025[11].

Some members of our community are disproportionately impacted by AMSK. Women in Australia experience a higher prevalence and burden of a several AMSK conditions – osteoarthritis (OA), for example, is estimated to effect 10.4% of Australian females compared to 6.1% males – yet policies, datasets, and models of care are largely gender neutral[12]. In addition, First Nations people are at a higher risk of disabling AMSK pain, experiencing 1.4 times the burden of AMSK conditions than the non-Indigenous Australians, yet access to primary care is disproportionately lower[13]. This is likely due to the ongoing impacts of colonialism, including poverty, racism, barriers to accessing care, and poor experiences with health care.

AMSK treatment and health system costs

Of the estimated $270.5 billion spent on healthcare in Australia in 2023-24, approximately $180.4 billion was spent on disease and injury, an increase of $10.2 billion from 2022-23[14]. In 2023–24, cancer and other neoplasms was the disease group with the highest spending ($19.7 billion, accounting for 10.94% spending), followed by cardiovascular diseases ($16.9 billion, 9.37%), and musculoskeletal disorders ($16.3 billion, 9.03%). The conditions with the highest spending in 2023–24 were injuries from falls ($5.4 billion), osteoarthritis ($4.8 billion) and back pain and problems ($4.0 billion)[15]. For private hospital admitted patients, musculoskeletal disorders had the highest spending ($5.5 billion)[16].

These costs are exacerbated by a misalignment between clinical guidelines and the care that is delivered and funded. Clinical guidelines identify exercise, education, and allied health support as the most effective early management strategies for conditions like osteoarthritis[17]. However, fewer than half of Australian patients receive care in line with these recommendations, leading to an over-reliance on late-stage surgical interventions [18]. Of the $1.4 billion spent on knee replacements - primarily driven by osteoarthritis[19]- it is estimated that almost $500 million could be avoided by structured education and exercise therapy programs prior to knee replacement surgery[i,20].

Despite the higher prevalence of AMSK conditions among First Nations Australians, a systematic review found that these communities access primary care for knee or hip OA at approximately half the rate of non-Aboriginal people and were less than half as likely to have knee or hip replacement surgery[21]. The maldistribution of healthcare stands in stark contrast to the broader Australian healthcare landscape, which is often categorised by the overuse of surgical interventions, rather than a lack of them.

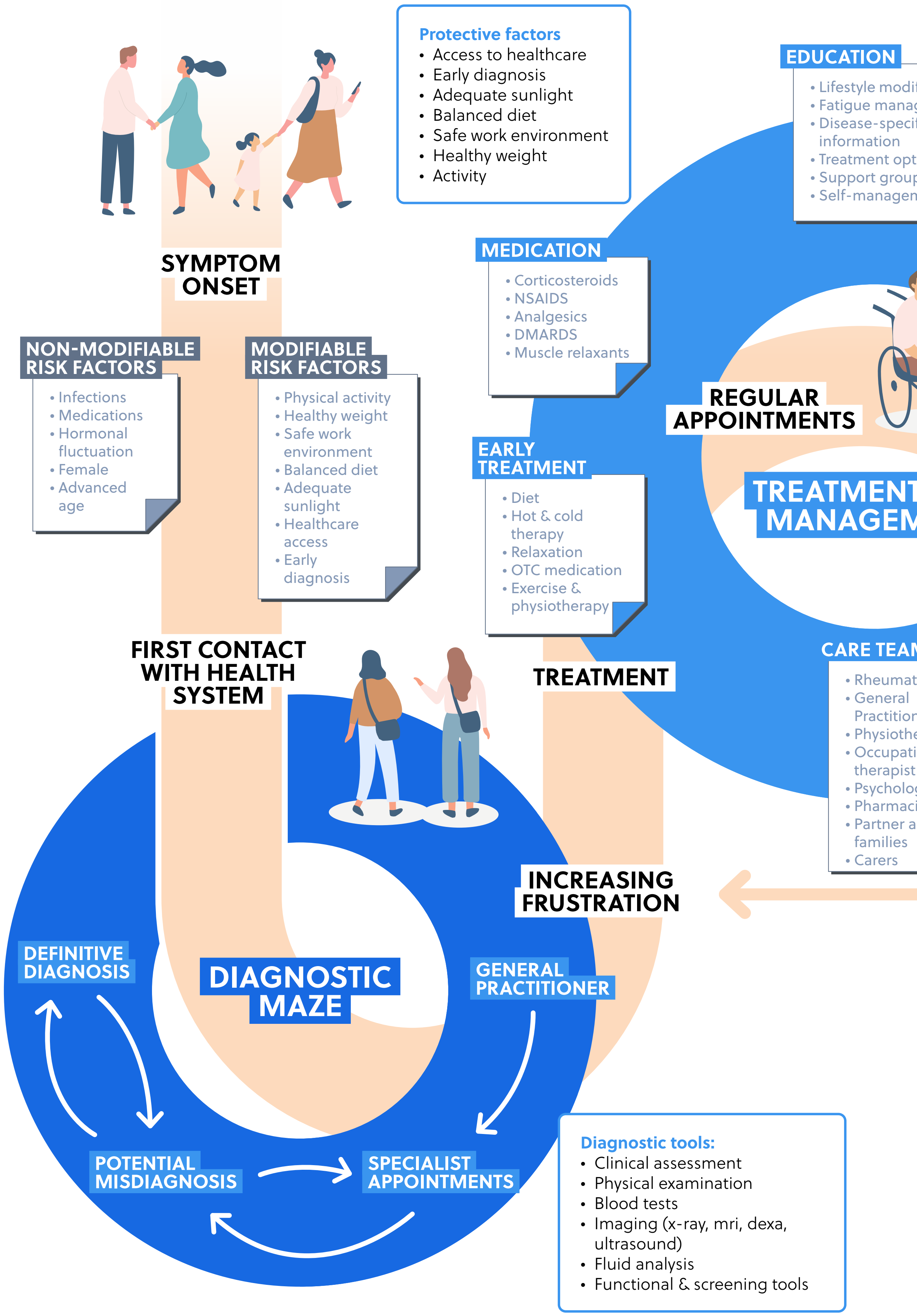
Current treatment for inflammatory arthritis (such as rheumatoid arthritis (RA), psoriatic arthritis (PsA), and ankylosing spondylitis (AS) relies heavily on disease-modifying anti-rheumatic drugs (DMARDs). DMARDs are a group of anti-inflammatory and immune-suppressing agents that have the potential to slow down the underlying disease process as well as reduce joint damage by minimising inflammation[22] and are broadly grouped into conventional (cDMARDs), biologic and biosimilar (bDMARDs), which contain proteins made by living sources and block specific parts of the immune system involved in causing inflammation, and targeted synthetic DMARDs (tsDMARDs), which target a signalling protein involved in inflammation[23]. While DMARDs can be highly effective in reducing disease activity, they have significant side effects, gastrointestinal issues, skin rash, and hair loss[24]. Side effects of bDMARDs include reactivation of chronic infections, elevated cholesterol, increased risk of blood clots, and in some cases, a patient’s immune system will react to biologics as if they are an infection and make proteins that attack the medication[25].

DMARDs represent a significant and growing expenditure on the Pharmaceutical Benefits Scheme (PBS), with costs for rheumatoid arthritis alone projected to increase to over $375 million by 2030[26].

---

[i] Implementation of a national education and exercise therapy program for knee osteoarthritis prior to TKR was estimated to produce a cost savings of $489,307,942 or $7970 per person, over the lifetime horizon compared with usual care.

Figure 1: Consumer Journey Map



Protective factors
- Access to healthcare
- Early diagnosis
- Adequate sunlight
- Balanced diet
- Safe work environment
- Healthy weight
- Activity

SYMPTOM ONSET

NON-MODIFIABLE RISK FACTORS
- Infections
- Medications
- Hormonal fluctuation
- Female
- Advanced age

MODIFIABLE RISK FACTORS
- Physical activity
- Healthy weight
- Safe work environment
- Balanced diet
- Adequate sunlight
- Healthcare access
- Early diagnosis

FIRST CONTACT WITH HEALTH SYSTEM

DIAGNOSTIC MAZE

GENERAL PRACTITIONER

SPECIALIST APPOINTMENTS

POTENTIAL MISDIAGNOSIS

DEFINITIVE DIAGNOSIS

Diagnostic tools:
- Clinical assessment
- Physical examination
- Blood tests
- Imaging (x-ray, mri, dexa, ultrasound)
- Fluid analysis
- Functional & screening tools

INCREASING FRUSTRATION

TREATMENT

EARLY TREATMENT
- Diet
- Hot & cold therapy
- Relaxation
- OTC medication
- Exercise & physiotherapy

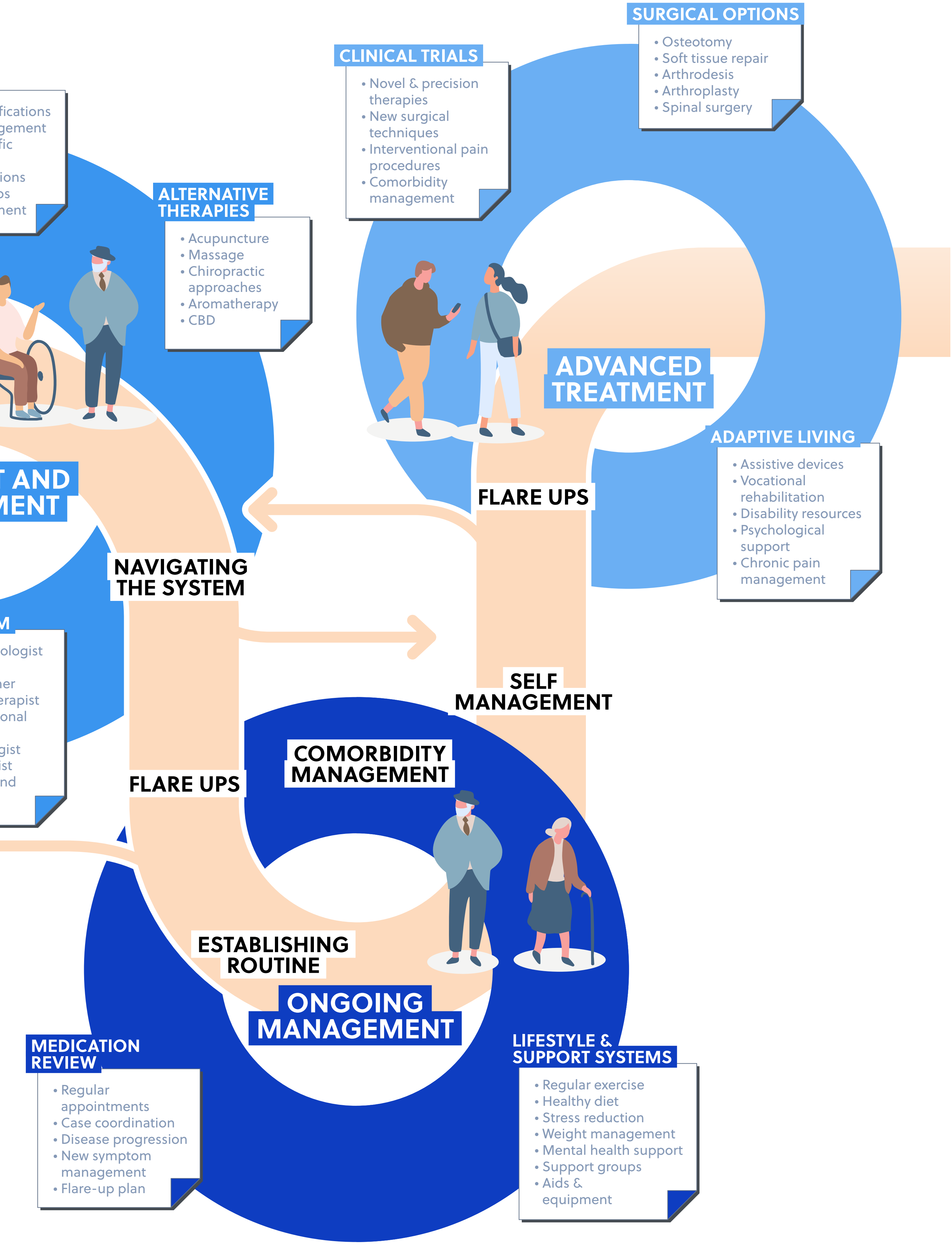
MEDICATION
- Corticosteroids
- NSAIDS
- Analgesics
- DMARDS
- Muscle relaxants

REGULAR APPOINTMENTS

TREATMENT MANAGEM

EDUCATION
- Lifestyle modi
- Fatigue mana
- Disease-speci information
- Treatment opt
- Support grou
- Self-managen

CARE TEA
- Rheumat
- General Practition
- Physiothe
- Occupati therapist
- Psycholo
- Pharmaci
- Partner a families
- Carers



- fications
gement
fic

- ions
os
nent

**T AND
MENT**

M

- ologist

- ner
erapist
onal

- gist
ist
nd

ALTERNATIVE THERAPIES

- Acupuncture
- Massage
- Chiropractic approaches
- Aromatherapy
- CBD

CLINICAL TRIALS

- Novel & precision therapies
- New surgical techniques
- Interventional pain procedures
- Comorbidity management

SURGICAL OPTIONS

- Osteotomy
- Soft tissue repair
- Arthrodesis
- Arthroplasty
- Spinal surgery

ADVANCED TREATMENT

ADAPTIVE LIVING

- Assistive devices
- Vocational rehabilitation
- Disability resources
- Psychological support
- Chronic pain management

FLARE UPS

NAVIGATING THE SYSTEM

SELF MANAGEMENT

COMORBIDITY MANAGEMENT

FLARE UPS

ESTABLISHING ROUTINE

ONGOING MANAGEMENT

MEDICATION REVIEW

- Regular appointments
- Case coordination
- Disease progression
- New symptom management
- Flare-up plan

LIFESTYLE & SUPPORT SYSTEMS

- Regular exercise
- Healthy diet
- Stress reduction
- Weight management
- Mental health support
- Support groups
- Aids & equipment

Personal costs associated with managing AMSK

The social and economic consequences are far reaching, and are particularly impactful for younger Australians, with a 2021 study finding that the median out-of-pocket expenditure of working aged adults aged 18-50 years living with arthritis was $1,635 over a six-week period. Beyond these personal costs, the impact on the national health system is substantial. In 2023-24, AMSK conditions cost the health system $16,296 million, accounting for 9.03% of spending[27]. By 2040, the annual cost of osteoarthritis and rheumatoid arthritis alone is expected to surpass $11 billion (inflated to future dollars)[ii][28].

Health costs are part of a much larger economic burden. AMSK is the second most common cause of early retirement due to ill-health[29]; by 2030 it is projected that 59,000 Australians will be unable to work due to AMSK[30]. This will contribute to substantial losses in personal income and productivity, with GDP loss from AMSK-related early retirement expected to reach $9.4 billion annually by 2030[31]. Back pain alone is estimated to result in a loss of 3.2 million productivity-adjusted life-years over the next decade, equating to a loss of more than $638 billion by 2033[32].

Multimorbidity

AMSK conditions rarely occur in isolation and are a primary driver of multimorbidity in Australia because of their high prevalence, shared risk factors, and shared pathogenic processes amongst other long-term conditions[33]. In 2022, approximately 38% of Australians were living with multimorbidity, and of the 20 most common co-occurring condition pairs, nine involve arthritis or other musculoskeletal conditions[34]. This overlap creates a compounding burden on the health system and significantly reduces workforce participation, falling to 77% for those with multimorbidity compared to 87% for those without[35].

Chronic pain, a hallmark of many AMSK conditions, is a known driver of poor mental health and suicidal behaviours[36]. Data indicates a profound overlap: in 2022 approximately 1.3 million Australians were living with both anxiety and back problems, while another 1 million lived with back problems alongside depression[37]. Failure to manage the underlying pain drives these mental health comorbidities, increasing the complexity and cost of care.

While AMSK conditions are often viewed as non-fatal, they significantly impact mortality risks for fatal conditions, including cardiovascular and infectious diseases. For example, the majority of newly diagnosed PsA patients have a >10% risk of cardiovascular disease within 10 years of PsA incidence and will experience roughly1.5x higher mortality compared to individuals without PsA[38], and osteoarthritis appears to increase the risk of developing cardiovascular disease[39].

AMSK conditions are closely linked to higher risks of infectious disease due to both disease-related immune dysfunction and the frequent use of immunosuppressants to manage symptoms[40]. In addition, AMSK conditions can arise as an immune-related adverse event from cancer immunotherapy, blurring boundaries between traditionally "non-fatal" and life-threatening disease categories[41].

[ii] Inflated to future dollars.

Acknowledging this interconnected risk landscape underscores the need for integrated AMSK to enhance quality of life and to indirectly reduce the broader burden of cardiovascular and infectious diseases and mental illness across the population.

Misalignment between burden and research investment

Comparing disease burden, health-system spend, and research investment highlights that AMSK conditions remain structurally underfunded relative to impact. AMSK conditions account for 12.7% of the total burden of disease and 9.03% of health system spending, yet has received 2.44% of MRFF research funding and 3.36% of NHMRC funding since 2015.

Cancer and cardiovascular disease (CVD) carry higher overall burdens of disease (16.04% and 12.46% respectively) than other conditions, with particularly high fatal to non-fatal burden ratios (8.7% : 91.3%, 29.8% : 70.2%). They also consume larger shares of healthcare spending and research funding, reflecting their critical impact on mortality and morbidity in Australia. Cancer also incurs the largest healthcare costs, totalling $19.74 billion (10.94% of spending). In 2024, cancer received the largest proportion of NHMRC funding ($164.7 million, 12.28%) and the second largest share of MRFF funding ($101.8 million, 13.86%). By contrast, cardiovascular disease (CVD) captures a similar share of health expenditure ($16.90 billion, 9.37%) but a larger proportion of MRFF funding in 2024 ($103 million, 14.03%).

Mental health incurs a similar fatal to non-fatal burden as AMSK, but incurs lower health system costs ($12.35 billion, accounting for 6.49% spending). Despite this, in 2024, mental health received more than twice in NHMRC funding ($102.8 million, 7.66% total funding) compared to AMSK ($40.9 million, 3.05%), and additionally secured the highest proportion of MRFF funding ($122.4 million,16.67%), more than three times AMSK ($33.7 million, 4.49%).

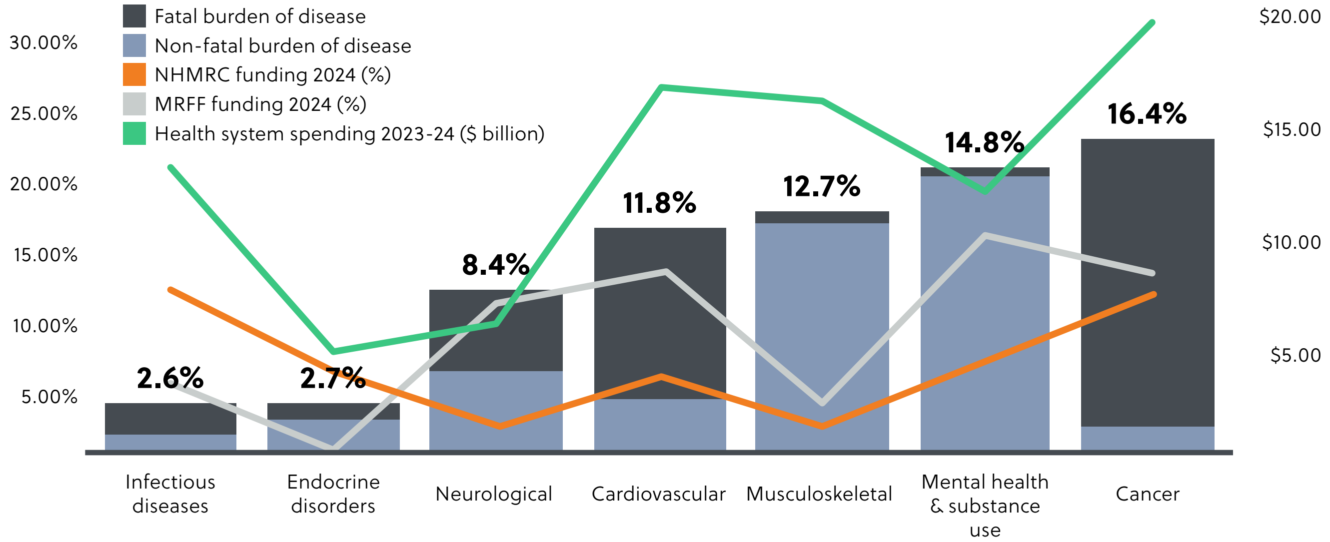


Figure 2: AMSK Treatment and Health System costs

Healthcare system costs

Osteoarthritis (2020–21)

$4.29B total cost

$3.52B on private and public hospital admissions (joint replacements)

Rheumatoid Arthritis (2020–21)

$966M+ total cost

$757M on pharmaceuticals

Arthritis & MSK (2022–23)

$15.94B cost to the health system

Knee Replacements for OA

$1.4B spent each year

$200M could be avoided with better management and lifestyle changes

Environmental impact

Healthcare contribution

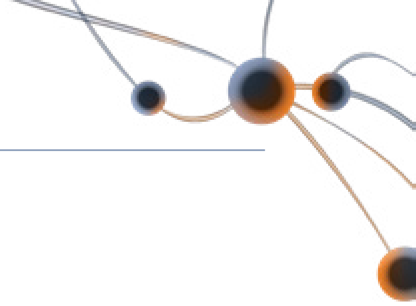
7% of Australia's carbon emissions. (approx)

Joint Replacement Emissio

15.8 kg CO_2	Knee replacemen
14.6 kg CO_2	Hip replacements
23.6 kg CO_2	Revision surgerie

Medical Imaging

Radiology	Contributes up to 1% o global GHG emission
lower-back imaging	30–40% of may be unnecessary
MRI	17.5 kg CO_2 (≈ 145 km drive)
CT	9.2 kg CO_2 (≈ 76 km drive)



Individual costs

Out-of-Pocket Costs for Women with Arthritis

$1,635 6-week median cost for medical & allied health

$673 per year OA-related healthcare consultations, prescription medications, products, and practices

National impact

$873M per year

Total out-of-pocket spend for Australian women 50+ with OA

Economic and Productivity costs By 2030

59,000 people (ages 15–54) projected to be unable to work due to arthritis

Government Revenue + Welfare Impact

$1.1B per year

in extra welfare payments + lost tax revenue

Lost Productivity

$9.4B per year

lost GDP from arthritis-related early retirement

$10.5B per year

lost GDP due to back pain

Addressing this significant funding imbalance which limits research and in turn effective care of AMSK conditions, requires a strategic and systematic evidence-based approach. This report represents findings of this multi-stage investigation, integrating policy analysis, existing evidence and stakeholder consultation as well as independent cost-benefit analysis.

1. **Research policy environment review** including current research themes, and outcomes and learnings from existing research infrastructure.
2. **Stakeholder consultation** including focus groups, interviews, and consensus-building workshop.
3. **Model evaluation** including feasibility and cost-benefit analysis.
4. **Proposal for a national research initiative** to coordinate research, generate new evidence, and accelerate translation.
5. **A core priority** a dedicated research entity to address critical inequities in AMSK care.

2 Landscape and Evidence Review

2.1 Overarching National Strategies

Australia's national health policies establish the strategic priorities for AMSK conditions.

The *National Strategic Framework for Chronic Conditions* is the overarching policy for the prevention and management of chronic conditions in Australia, providing guidance on the development and implementation of policies, strategies, actions and services to address chronic conditions and improve health outcomes[iii,42]. This is complemented by the *National Preventive Health Strategy 2021-2030*, which provides the central, long-term approach to prevention by building systemic change[43].

Medicare Chronic Disease Management (CDM) services support General Practitioners to plan and coordinate care for people with chronic or terminal medical conditions likely to be present for six months or longer, such as AMSK conditions. These services provide access to Medicare-subsidised individual and group allied health services for those with complex care needs.

From 1 July 2025, the CDM service has been simplified from several care planning tools into a unified GP Chronic Condition Management plan (GPCCMP). Under the new model, consumers must have their plan reviewed at least every 18 months to retain allied health access, and referrals will be simplified via standard letters. For AMSK care, where ongoing physiotherapy, exercise physiology, and podiatry are critical, this may streamline access, **but the unchanged cap of 5 allied health visits per year remains a limitation for consumers with complex needs.**

These changes, resulting from a review by the MBS Review Taskforce, which was informed by the General Practice and Primary Care Clinical Committee, are summarised in Appendix C (Table 8).

[iii] In March 2024 the Department of Health and Aged Care commenced a refresh of the National Strategic Framework for Chronic Conditions; at the time of writing the refreshed strategy had not been published.

2.2 Arthritis and Musculoskeletal Policies

The National Strategic Action Plan for Arthritis provides an evidence-informed blueprint to guide national efforts to improve health-related quality of life for people living with arthritis, reduce the cost and prevalence of the condition, and reduce the impact on individuals, their carers, and the community[44]. *The National Strategic Action Plan for Osteoporosis* sets out the priorities, objectives and actions for addressing the increasingly complex challenges and burden of osteoporosis across Australia[45]. Both plans include three interconnected priority areas and specific actions to support each of the priority objectives.

Crucially, both action plans identify strategic research investment as a core priority. The Arthritis Action Plan explicitly calls for the establishment of a national MRFF mission and a virtual research institute to coordinate investment. Similarly, the Osteoporosis Action Plan recommends a focus on strategic, translational research and calls for exploring new funding opportunities through the MRFF and NHMRC to improve outcomes.

Table 2: The National Strategic Action Plans for Arthritis and Osteoporosis Priority Areas

The National Strategic Action Plan for Arthritis	The National Strategic Action Plan for Osteoporosis
Awareness, Prevention and Education	**Awareness and education with a focus on prevention**
1.1. Increase community awareness and understanding of arthritis, its risk factors and opportunities for prevention and improved management. 1.2. Reduce the risk of developing arthritis across the life course. 1.3. Empower people with arthritis with information, education and support to effectively self-manage their condition.	1.1. Increase community awareness and understanding of the importance of bone health and osteoporosis, including its risk factors and prevention. 1.2. Establish systems to deliver online national school education programs on the importance of bone health and early prevention of osteoporosis. 1.3. Improve health professional access to osteoporosis education and resources.
High-value person-centred care and support	**Improved diagnosis, management and care**
1.1. Drive systems-level improvements to support the delivery of high-value care for people with all types of arthritis. 1.2. Improve affordable and timely access to appropriate health care, services and treatments. 1.3. Support health professionals with information, education and tools to deliver high-value arthritis care. 1.4. Address the needs of priority populations.	1.1. Enhance and expand prevention of secondary fracture by integrating a best practice Fracture LiaisonLiaisonLiaison Service (FLS) model of care across the majority of hospitals in Australia. 1.2. Pilot an integrated national approach for secondary fracture prevention with primary care. 1.3. Pilot a National Osteoporosis Risk and Identification Program targeting Australians over 70 years old.
Research, evidence and data	**Data collection, monitoring and strategic research**
1.1. Fund a national arthritis and musculoskeletal health mission from the MRFF to increase strategic investment in research and research capacity. 1.2. Enhance data collection, linkage and analysis to drive quality improvement in arthritis prevention, management and outcomes.	1.1. Develop or enhance an integrated decision support and management platform (clinical platform) to enable better GP and other health professional patient interactions in both hospital and primary care settings. 1.2. Develop data collection processes and technical capabilities to integrate a clinical platform with existing Electronic Management Records (EMR) systems, in both hospitals and primary care settings. 1.3. Drive strategic priority research supporting translation and implementation research, to improve patient care and outcomes.

2.3 Standards and Guidelines

Clinical guidelines provide the evidence-based standards for prevention, diagnosis, and management of AMSK conditions in Australia. They represent a critical bridge between research evidence, clinical practice, and health policy, guiding decision-making by general practitioners, specialists, and allied health professionals. A summary of relevant guidelines can be found in the Annex.

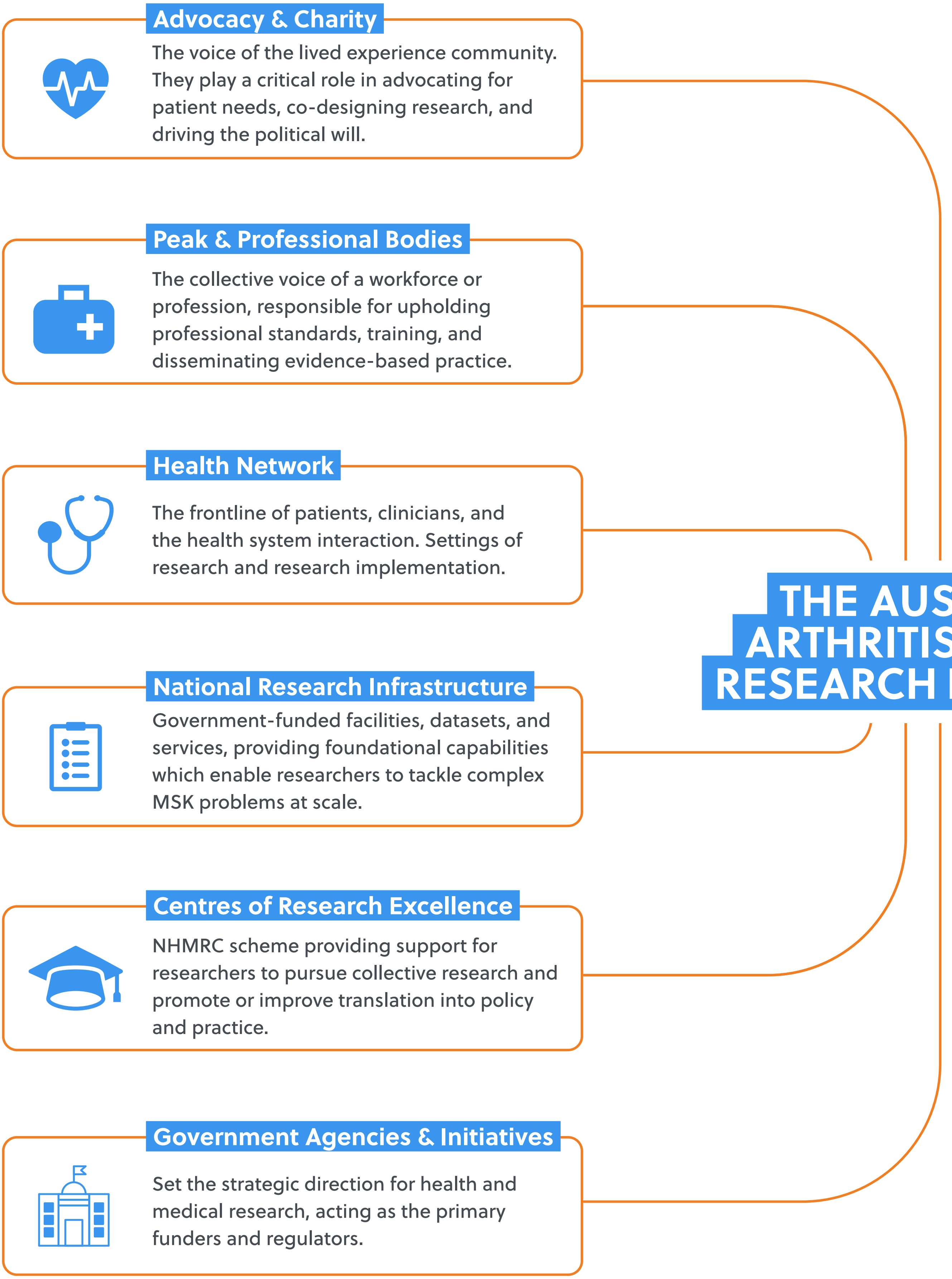
Gaps remain in how consistently these recommendations are implemented and supported across the health system. Strengthening alignment between guidelines, funding, and service delivery is critical, and a national research initiative offers a mechanism to drive this coordination and translation into practice.

2.4 Australian Ecosystem and Key Stakeholders

Figure 3 provides a visual overview of the Australian AMSK ecosystem, illustrating the diverse and numerous stakeholders involved. Figure 4 shows a vibrant and capable system, encompassing everything from government funders and medical research institutes to frontline health networks, industry partners, and crucial consumer advocacy groups.

However, the sheer number of actors and the lack of a central coordinating body lead to this immense potential not being fully realised, and was cited by researchers during consultation as one of the primary reasons for the broader systemic gaps in funding, translation, and implementation (detailed in 2.6).

Figure 3: Overview of Australian AMSK Research Ecosystem



Advocacy & Charity

The voice of the lived experience community. They play a critical role in advocating for patient needs, co-designing research, and driving the political will.

Peak & Professional Bodies

The collective voice of a workforce or profession, responsible for upholding professional standards, training, and disseminating evidence-based practice.

Health Network

The frontline of patients, clinicians, and the health system interaction. Settings of research and research implementation.

National Research Infrastructure

Government-funded facilities, datasets, and services, providing foundational capabilities which enable researchers to tackle complex MSK problems at scale.

Centres of Research Excellence

NHMRC scheme providing support for researchers to pursue collective research and promote or improve translation into policy and practice.

Government Agencies & Initiatives

Set the strategic direction for health and medical research, acting as the primary funders and regulators.

STRALIAN
AND MSK
ECOSYSTEM

International NGOs

Connect the Australian research community to global efforts. They ensure our work is aligned with global priorities and that we learn from and contribute to breakthroughs.

Medical Research Institutes

MRIs work on a broad spectrum of human health issues, ranging from fundamental biomedical discovery through to clinical research and the translation of findings.

Cooperative & Translational Research Centres

Partnerships between industry, researchers, and community. Vital for developing advanced manufacturing for regenerative therapies and scaling up digital health solutions.

Hospital and University Based Research Centre, Institutes, Laboratories

The nexus of academic research and clinical care, conducting research & translating discoveries into practice.

Industry & Consortia

The commercial engine for research, translating discoveries from the lab into market-ready drugs, devices, and diagnostics.

Networks, Collaboratives, Alliances

Link researchers, clinicians, and data across multiple institutions. They are essential for overcoming fragmentation and enabling large-scale, nationally significant projects.

2.5 Research Funding

The Department of Health, Disability and Ageing is Australia's largest public funder of health and medical research, via the Medical Research Future Fund (MRFF), the National Health and Medical Research Council (NHMRC), the Biomedical translation fund, and grants to universities and other organisations. To understand alignment with national health needs, we compared disease burden and health-system expenditure with research investment **by burden-of-disease (BoD) group** (Table 3).

The research investment figures in table 3 draws from three distinct data streams: MRFF funding allocations[46], NHMRC 'Major Diseases' reporting[47], and NHMRC specific grant round outcomes[48]. Triangulating these datasets is essential to understand the true state of AMSK research capacity, as each dataset measures a different aspect of the funding pipeline.

> ***"My experience is that cancer gets a substantial amount of money from philanthropy and from grateful patients, and I think the same applies for diabetes - those are the big diseases that are very high profile. They get a large amount of money from government, but they also get a large amount of money from the general public".***
>
> Professor Chris Maher AM, Director of the Institute for Musculoskeletal Heath; Professor in the School of Public Health at the University of Sydney

- **Major Diseases, conditions, or health areas (attributed/active funding):** This dataset reflects the broad relevance of the NHMRC's active portfolio. Under this classification, a single grant addressing multiple conditions (e.g., mental health in arthritis patients) allows the full dollar value to be attributed to both categories. While this demonstrates the interconnected nature of AMSK health, it represents total research exposure rather than exclusive financial investment. It is therefore not appropriate to add the totals of different disease groups together, as this would result in double counting.
- **Grant Outcomes (New Investment):** In contrast, this data represents new operational spending awarded in specific cycles (e.g., the 2025 round). This figure is a more accurate indicator of the immediate pipeline of new projects and the current success rate of AMSK researchers in the competitive, investigator-initiated system.

Standard MRFF categorisations understate AMSK funding because AMSK conditions are not well captured - our initial analysis (using the MRFF 'Field of Research') found only 8 AMSK-related projects funded through the MRFF. To produce more accurate estimates, we developed a categorisation method[iv] that groups initiatives according to burden of disease area, allowing for a more meaningful comparison across conditions[v]. This method was subsequently applied to the outcomes of the 2023 and 2024 NHMRC grant application rounds.

Comparing disease burden, health-system spend, and research investment highlights that AMSK conditions remain structurally underfunded relative to impact. AMSK accounts for 12.7% of the total burden of disease and 9% of health system spending, yet has received 2.44% of MRFF since 2015. By contrast, cardiovascular disease (CVD) captures a similar share of health expenditure (9.37%) but a far larger share of MRFF funding (13.40%). Cancer receives the largest share of MRFF research funding (18.85%) in addition to a significant share of NHMRC funding.

Including infectious diseases and endocrine disorders strengthens this picture. Infectious diseases drive 6% of health system spending and have attracted 7.88% of MRFF funding. Endocrine disorders (dominated by diabetes, which is estimated to affect 5.3% of Australians) carry 2.7% of the burden of disease and account for 2.88% of health systems spending.

[iv] See annex for categorisations.

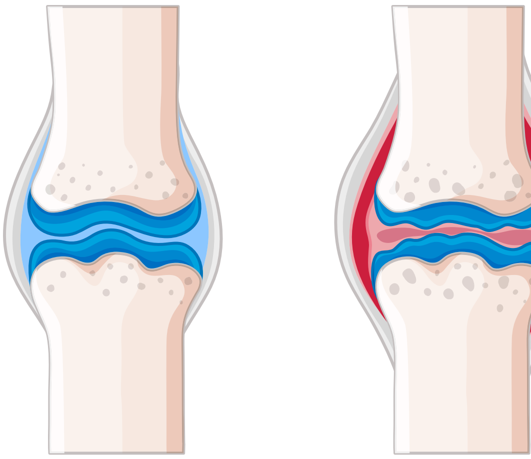
[v] To correct for known under-reporting of musculoskeletal projects in standard MRFF reporting, all grants identified as AMSK-related underwent manual verification by subject matter experts to ensure accuracy. Comparative data for other disease groups (CVD, Cancer, Mental Health, etc.) was derived using the same keyword and Burden of Disease classification logic but did not undergo individual manual audit due to dataset volume. Consequently, while AMSK figures represent verified investment, comparative figures should be interpreted as indicative estimates based on publicly available project descriptions.

Figure 4: Context, Key Statistics and Projections

There are over

100+

types of arthritis



By 2040…

31%

increase in number of people with arthritis **5.39 million people.**

By 2030…

There will be 13 300 informal carers not in the labour force providing care to people with arthritis, resulting in

- $577 million lost in forgone income
- $148 million in lost tax revenue
- $167 million in additional support payment

In 2023-24…

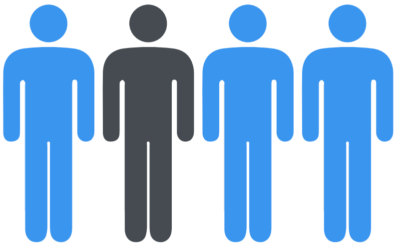
MSK cost the health system over $16 billion – 9% of all healthcare spending

- $4.81 billion on osteoarthritis
- $4.04 billion on back pain and problems
- $1.09 billion on rheumatoid arthritis

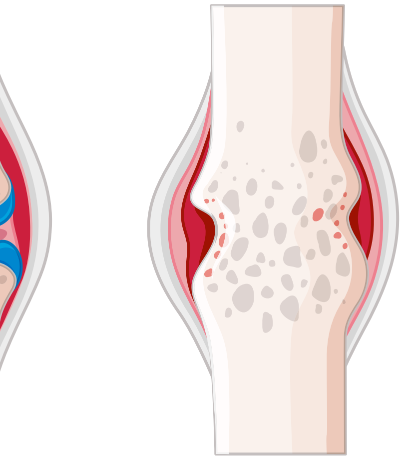
AMSK and mental health conditions

Of people living with multimorbidities.

5.3%	live with both anxiety and back problems
4.0%	living with back problems and depression
3.3%	living with osteoarthritis and back problems
2.9%	with anxiety and other MSK

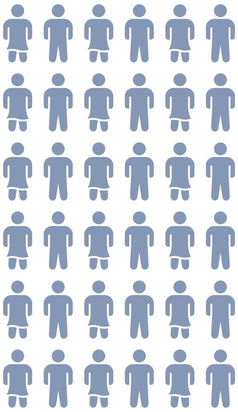


3 in 4 people with AMSK have another chronic condition, almost 1 in 2 have two or more.



s

Rheumatoid arthritis



AMSK can affect children (juvenile idiopathic arthritis)

8500

children expected to be affected by JIA by 2040

Environmental impact

30-40% of medical imaging may be unnecessary

1 MRI = 17.5kg^{CO_2}

Equivalent to driving 145km

1 CT scan = 9.2kg^{CO_2}

Equivalent to driving 76km

1 revision hip or knee replacement surgery **40kg^{CO_2}**

Equivalent to driving 330km. More than Sydney to Canberra.

Burden of disease verses Research funding

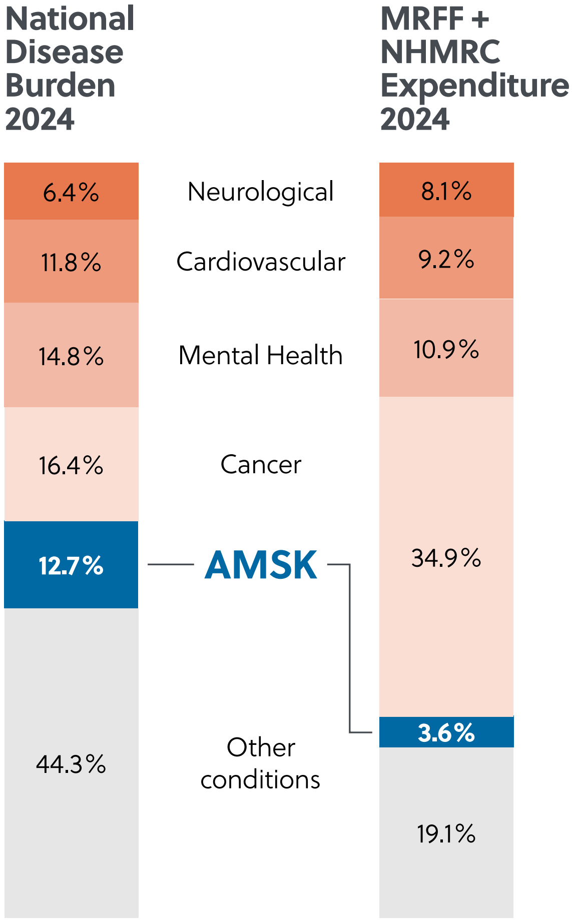


Table 3: Burden of Disease, Health Expenditure, and Funding for the leading Burden of Disease Groups and areas of high health and research spending[vi]

	Infectious Diseases	Endocrine Disorders	Neurological[vii]	Cardiovascular disease	**AMSK**	Mental Health	Cancer and other neoplasms	Other BOD areas	Total
Burden of disease 2024[49]									
Total	2.6%	2.7%	8.4%	11.8%	**12.7%**	14.8%	16.4%	30.60%	
Non-fatal	29.8%	61.9%	50.2%	25.0%	**97.1%**	98.2%	8.75%		
Fatal	38.1%	49.8%	49.8%	75.0%	**2.9%**	1.8%	91.3%		
Prevalence									
Prevalence	N/A	5.3%[viii][50]	~25%[51]	6.7%[52]	**28.8%[53]**	22%[54]	1.8%[55]		
Health System spending on disease and injury 2023-24[56]									
$ Million	$13,292	$5,187	$6,565	$16,899	**$16,295**	$12,351	$19,743	$90,092	$180,425
Proportion (%)	7.37%	2.88%	3.64%	9.37%	**9.03%**	6.85%	10.94%	49.93%	100.00%
Rank	5	18	11	2	**3**	7	1		
Funding									
MRFF Funding 2023-24[57] ($ million)									
Number of grants	23	8	18	31	**13**	47	41	89	270
Total funding	$42.7	$11.8	$88.9	$98.2	**$33.7**	$86.7	$98.3	$202.2	$ 662.4
(%)	6.45%	1.78%	13.42%	14.82%	**5.09%**	13.09%	14.84%	30.52%	100.00%
MRFF funding 2015-2025[58] ($ million)									
Number of grants	140	36	138	230	**58**	316	324	524	1766
Total funding	$343.8	$81.6	$311.9	$584.9	**$106.7**	$581.7	$822.6	$1,530.3	$4,363.40
(%)	7.88%	1.87%	7.15%	13.40%	**2.44%**	13.33%	18.85%	35.07%	100.00%
NHMRC funding allocated for disease, research & health 2024[59] ($ million)									
Total funding	$167.2	$91.6	$181.9	$88.8	**$40.9**	$102.8	$164.7	$504.1	$1,342
NHMRC funding allocated for disease, research & health 2015-2024[60] ($ million)									
Total funding	$1,616.1	$496.2	$1,985.0	$1,063.7	**$476.4**	$1,014.9	$1,711.4	$5,811.8	$14,175.5
NHMRC Research funding (awarded grants) 2023-24[61]									
Number of grants	76	15	51	68	**16**	78	155	489	948
Total funding	$116.5	$26.1	$77.2	$93.1	**$23.2**	$126.0	$231.1	$715.1	$1,407.4
(%)	8.28%	1.85%	5.49%	6.55%	**1.65%**	8.95%	16.42%	50.81%	100.00%

[vi] Percentages shown relate to the top five burden of disease groups only and therefore do not sum to 100%.

[vii] Including Dementia.

[viii] This includes people with type 1 diabetes, type 2 diabetes and other diabetes, but excludes gestational diabetes.

Mental health (including substance use) accounts for 14.8% of the total burden of disease and is attributable to 6.85% of healthcare spending. From 2015-2024, mental health has received more than double in funding from the NHMRC ($1014.9 million) and nearly fivefold in MRFF funding ($581.7 million (13.33%) compared to AMSK ($476 million, and $106.7 million, 2.44%, respectively). AMSK and mental health are distinctive among the leading burden-of-disease groups because their burden is overwhelmingly **non-fatal**, unlike cancer, cardiovascular and neurological conditions where fatal burden dominates. Consistent with this, a 2021 analysis found MRFF allocations were **correlated with fatal burden** (R^2= 0.57), with a weaker association when death and disability were combined (R^2=0.44), and **no association with disability burden** alone (R^2 =0.001).

Together, these observations suggest a structural tilt toward funding high-mortality conditions – a significant investment in AMSK research would help address that gap by explicitly targeting Australia's large, persistent non-fatal disease burden.

2.6 Current Research Themes

This section provides a rapid horizon scan of selected research outputs drawing on sources such as recent MRFF and NHMRC grants, outputs from identified research groups, and targeted searches of health services and implementation projects. The purpose is to illustrate the breadth of activity and highlight examples of research "pockets" across health services research, health economics, digital health, pharmacological interventions, and genomics and biobanking.

From the inception of the MRFF to 2025, approximately $106.4 million has been awarded to 61 AMSK-related projects, alongside $476 million in NHMRC funding. Significant additional funding also flows through private, philanthropic, and industry sources.

Despite this scale of investment, researchers that participated in our consultation described the research landscape as siloed, fragmented and poorly coordinated. Several noted that valuable projects often remain isolated "pockets of excellence," with limited impact on policy or practice. Others were more critical, observing that research activity may be of variable quality or insufficiently designed to answer clinically meaningful questions. This feedback highlights not just the volume of research, but the need for mechanisms to ensure that research funding is aligned, prioritised, and translated into outcomes that matter for consumers and health services.

A national research initiative with a unified funding approach and peer review mechanism would address these existing silos, enabling the AMSK research community to unlock significant potential, foster greater collaboration and accelerate translational impacts.

2.6.1 Health Services Research

A primary finding of this review is the significant and growing focus on innovative models of care designed to deliver more effective, patient-centred, and efficient treatment.

Staying Moving, Staying Strong: the first culturally appropriate education resources for First Nations Australians with arthritis or autoimmune diseases, developed in a process based on community engagement and a co-design approach.

Pathway of CarE for MSK (PACE MSK): A multi-centre RCT found PACE-MSK reduced low value care (imaging and surgical referrals) whilst retaining high value care (advice and exercise).

PACE-RURAL: A hybrid effectiveness-implementation trial: people at low risk will receive care to transition to self-management, and patients at high risk will be referred to a specialist physiotherapist who will collaborate with patient and patient's physiotherapist via telehealth.

Osteoarthritis Chronic Care Program (OACC): an evidence-based, public hospital program in NSW that supports OA self-management, delays surgery, and improves outcomes through coordinated, multidisciplinary care. After completing a non-surgical, multidisciplinary model of care, people with hip and knee OA were found to have significantly improved self-reported outcomes and objective measures of physical performance.

COASTAL: A large hybrid implementation RCT testing face-to-face, telehealth, and app-based (OA Coach) care. Co-designed with consumers and clinicians, COSTAL aims to compare outcomes, implementation, and cost-effectiveness of digital and remote delivery models.

HeLP for Pain Program: An evidence-based model of care integrating pain education and lifestyle interventions to reduce pain and chronic disease risk, which is currently expanding to rural populations through the HeLP-R trial.

Better Knee, Better Me: An evidence-based 12-month online support program designed to help manage knee osteoarthritis. This program, available for eligible Medibank members, combines personalised plans for exercise, weight loss, and pain management that aim to help reduce the impact of knee osteoarthritis on quality of life and reduce the likelihood of needing total knee replacement surgery.

RESTORE: A seven-session program of cognitive functional therapy (CFT) delivered by specially trained physiotherapists significantly reduced people's back pain and improved their function, compared with usual care. Cognitive Functional Therapy uses a multi-dimensional clinical reasoning framework to identify and target the factors important for each individual and has three key foci: making sense of pain, exposure with control, and lifestyle changes.

2.6.2 Health Economics Research

Several recent studies provide insights into the economic and societal impact of AMSK conditions. These reports highlight both the current burden and the projected future costs, reinforcing the urgency of coordinated national investment.

The future burden of arthritis in Australia: Projections to the year 2040: Updated national projections for arthritis, osteoarthritis, rheumatoid arthritis, and juvenile idiopathic arthritis, based on new 2023 population data.

Economic impact of informal caring for a person with arthritis in Australia from 2015 to 2030: Estimated the economic burden of informal carers not in the labour force, with an average weekly income gap of $1,051 compared with non-carers, projected to grow by 22% by 2030; national annual losses are expected to increase from $388 million in 2015 to $577 million in 2030.

Osteoporosis and fractures in Australia. A burden of disease analysis 2023 – 2033: Estimated the annual and future burden of osteoporosis and osteopenia using a bottom-up costing approach, attributing costs to fracture management, treatment, and prevention from a societal perspective.

Socio-economic status impacts health care visit frequency by patients with arthritis: Utilising results from the Australian Rheumatology database, the study found an inverse relationship between annual GP visit frequency and higher SES quintile and a direct relationship between more frequent specialist visits and higher SES.

Counting the Cost: The Current and Future Burden of Arthritis: provides estimates of the prevalence and costs of arthritis from 2015 to 2030, under a ‘business as usual’ scenario. It also models the impact of implementing non-surgical interventions for knee osteoarthritis, to illustrate the potential benefits for individuals, governments and the economy from better arthritis care.

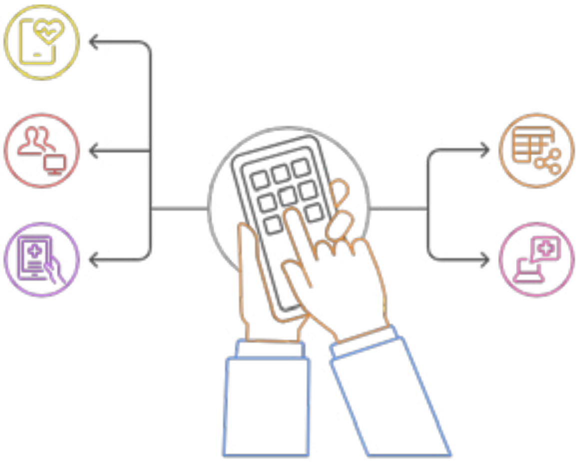
- **Part 1: Healthcare Costs** estimated the current (2015) and future prevalence of arthritis and the associated costs to the health system; the healthcare costs for arthritis were estimated to exceed $5.5 billion in 2015, and were projected to exceed $7.6 billion by 2030.
- **Part 2: Economic Costs** considers the economic costs of arthritis, including lost personal income, increased welfare payments, reduced taxation revenue and lost GDP; projected that the economic costs of lost productivity due to arthritis in Australians age 15-64 years would increase by 50% in lost income,

23% in additional welfare payments, and 44% in lost taxation revenue from 2015 to 2030. These lost workers due to arthritis resulted in a loss of $7.2 billion in GDP in 2015, and projected to increase to $9.4 billion in 2030.

Budget impact analysis on knee replacement avoidance: models potential cost savings associated with a first-line management program for moderate-severe knee osteoarthritis in Australia. Avoidance of TKR by 34%-68% of people after the first-line management program could translate to savings of $303 to $690 million in 2019. Successively lowering the proportion of people who avoided TKR demonstrated that only 1 in 12 program recipients would need to avoid surgery for the program to generate savings.

2.6.3 Digital Health Innovations

A growing body of research is exploring how digital tools, such as apps, telehealth platforms, and data-driven interventions, can support self-management, improve access to care, and enhance clinical decision-making for people with AMSK conditions



painHEALTH: WA Department of Health–led; co-developed with universities and clinicians to support Australians living with AMSK pain through accessible, evidence-based self-management resources.

MyPainHub: A co-designed, evidence-based digital platform that supports self-management and clinical care for common AMSK conditions, offering tailored guidance via validated screening tools, but requiring active implementation strategies to embed in clinical practice.

Bone Health TeleECHO: A multidisciplinary telementoring program supporting clinicians across specialties and regions to manage complex osteoporosis and metabolic bone disease cases through collaborative, case-based learning.

2.6.4 Pharmacological Research

Research activity in pharmacological therapies includes studies focused on optimising the use of existing medicines, evaluating safety and effectiveness, and advancing new treatments including biologics, targeted therapies, and novel drug delivery approaches.

OpioidHALT II Trial: A pharmacist-led opioid tapering intervention trial for patients awaiting joint replacement, aiming to reduce persistent opioid use and improve post-operative outcomes and recovery.

Injectable Biolubricant Therapy: A novel molecular brush biolubricant designed to mimic cartilage and reduce joint friction in osteoarthritis, offering a potential long-acting, disease-modifying alternative to current symptom-focused treatments.

Stem Cell Therapy: late-stage research to assess the efficacy of a donor stem cell product developed by Australian biotechnology company Magellan Stem Cells for the treatment of osteoarthritis.

RESET Rheumatoid Arthritis: unites experts in immunotherapy, clinical trials, clinical practice and consumers to progress an antigen-specific tolerising immunotherapy. In early-phase clinical trials, participants in two of the dose groups entered disease remission within 8 weeks. The project is now preparing for phase 1 clinical trials, using $11.54 million grant through the MRFF Frontiers Health and Medical Research Initiative.

PROSPECT Trial: RCT testing strategies to reduce or stop biologic and targeted synthetic DMARDs in adults with RA and PA& PsA. Aims to guide personalised, cost-effective prescribing by identifying which patients can maintain disease control after DMARD tapering, with embedded economic evaluation.

2.6.5 Genomics and Biobanking Research

Australia continues to contribute to world-class initiatives in genomics and biobanking, with programs uncovering disease mechanisms, supporting precision medicine approaches, and generating large-scale longitudinal datasets to inform prevention, diagnosis, and treatment.

HOPE Research Program: A world-leading Australian initiative uncovering how rogue immune cell clones with somatic mutations drive autoimmune diseases like Sjögren's syndrome, and potentially rheumatoid arthritis, paving the way for precision immunotherapies targeting these disease-causing cells.

Australian Arthritis and Autoimmune Biobank Collaborative A3BC: national biobanking and information network to improve the health of men, women and children living with arthritis and autoimmune conditions. The network includes more than 70 rheumatology clinicians and researchers, over 60 recruitment sites, biobanks and research laboratories, and hopes to recruit over 50,000 participants. As of 1 September 2025, the A3BC website lists 35 publications and 77 posters and oral presentations that have utilised ARAD & A3BC data.

AJAR & ANZ CLARITY: Linked national registries and biobanking studies advancing understanding of juvenile arthritis causes, care needs, and long-term outcomes.

Exceptional Responders (ERAD Sub-study): Garvan-led national initiative applying precision medicine approaches to autoimmune and inflammatory diseases, including biobanking of hundreds of arthritic joints, and use of outlier case analyses to identify biomarkers and uncover novel treatment mechanisms.

A3BC for Kids / CHAMPION Trial: A national initiative applying precision medicine to juvenile idiopathic arthritis (JIA), aiming to optimise safe withdrawal of DMARDs.

2.7 Gaps and Implications

Despite the great breadth of research activity, there are persistent challenges. Evidence-based models of care are still not reaching many consumers, digital tools are under-utilised in routine practice, and pharmacological advances have not reduced the long-term cost burden. Few AMSK projects are designed with built-in implementation science approaches, slowing adoption of proven models of care and innovations into real-world practice. Concerningly, 7 in 10 people on waiting lists for joint replacement surgery have not accessed guideline-recommended non0surgical care. Significant variation in access and quality of care also persists by geography, socioeconomic status, and cultural background, compounding inequities in outcomes.

Based on the evidence reviewed for this project, and without making comparisons to other disease areas, it is likely that these gaps and implications reflect system-wide issues across health and medical research, rather than factors unique to the AMSK research ecosystem.

2.7.1 Data Gaps

In addition, important data gaps limit health system planning. The National Health Survey does not collect joint-specific data on osteoarthritis, limiting the accuracy of national prevalence estimates and burden of disease modelling. Population-level data on juvenile idiopathic arthritis relies on self-report, which does not provide robust estimates for service planning. Broader modelling of other high-burden AMSK conditions such as back pain, neck pain and gout is also lacking, reducing the capacity for long-term planning and resource allocation. Further, there are no comprehensive national data sources that capture allied health expenditure, community health services, or non-reimbursed consumer costs, and Australia lacks integrated AMSK data platforms linking clinical, pharmacological, hospital, and patient-reported outcomes.

Collectively, these limitations reduce the capacity to monitor trends, quantify costs, and evaluate prevention and treatment strategies.

2.7.2 Clinical trials capacity

Constraints in trial design, conduct, and reporting are common challenges across clinical research. AMSK research reflects this pattern and, importantly, has recent data to guide action. A Delphi study conducted through the ANZMUSC Clinical Trials Network highlighted critical learning needs for AMSK researchers in Australia and Aotearoa New Zealand. The highest five priorities were defining a meaningful research question, choosing the most appropriate trial design, involving consumers from trial design through to dissemination, minimising bias, and selecting appropriate comparators.

Despite the availability of resources such as ANZMUSC's prioritisation work and the Research Question Importance Tool (RQIT), defining a meaningful research question was ranked as the highest learning need for AMSK researchers, pointing to a disconnect between the existence of prioritisation frameworks and their consistent application. Possible explanations include time pressures, limited awareness of these tools, or uncertainty about how to embed these tools into early stages of study design.

This challenge aligns with broader national efforts, such as the Australian Clinical Trials Alliance's (ACTA) development of a complementary research prioritisation tool, and highlights a gap in embedding such frameworks into routine practice.

2.7.3 Consumer engagement in research

While consumer involvement in research is considered best practice, it is not standard practice in Australia – only 27% of research organisations provide specific training to their employees or members on consumer involvement in research, and few have established policies or processes. The Delphi study identified "involving consumers from MSK trial design through to dissemination" as one of the top five learning needs, reflecting both the recognised importance of consumer partnership and the uncertainty around how to achieve it in practice.

Promisingly, the recent release of the *Best Practice Guidance for Consumer Engagement in Arthritis and Musculoskeletal Research* in 2025 provides a structured framework to address many of the gaps identified in the Delphi study. The guidance sets out clear principles for inclusive and impactful consumer involvement, covering roles, remuneration, diversity, training, evaluation, and governance. Its value will depend on how widely it is circulated, adopted, and supported across the research sector. Embedding this guidance into funding processes, training programs, and institutional policies would help ensure that consumer perspectives are consistently and meaningfully integrated into AMSK research, thereby strengthening both trial quality and real-world relevance.

3 Stakeholder Engagement

3.1 Consumer Consultation

To ensure this project was grounded in the priorities of people with lived experience, a dedicated consumer workshop was held on 18 July 2025. Of the 19 consumers invited by Arthritis Australia, 12 attended the virtual two-hour session, facilitated by Research Australia.

The discussion was structured to capture the end-to-end consumer journey, covering topics such as the pre-diagnosis and diagnosis experience, challenges with current treatments and health services, the economic and personal burden of the condition, and the level of involvement in their own care. A key focus was to identify consumer priorities for a future research initiative and how new funding could directly benefit them. The themes are summarised visually in the mind map below (Figure 5).

The consumer workshop revealed consistent challenges across the AMSK care journey. Many participants had been diagnosed decades previously, and their stories highlighted persistent barriers to timely, effective care. Several recounted experiences of medical 'gaslighting', where symptoms were dismissed as psychological or exaggerated, requiring persistent self-advocacy or family interventions to secure referrals. For some, these systemic barriers extended to surgical triage, where an arthritis diagnosis could mean being deprioritised for joint replacement, despite debilitating pain.

The economic burden of AMSK conditions was a strong theme. Consumers described career interruptions, part-time work, or medical retirement, coupled with significant out-of-pocket costs for ongoing care. Private health insurance was seen as poorly suited to chronic conditions. Participants pointed to international examples showing how economic impact research can be used to influence governments and insurers.

A striking feature of the discussion was the degree to which consumers described themselves as their own primary care coordinators, keeping comprehensive medical records, timelines, and medication histories to bridge communication gaps between specialists and hospitals. They described learning to proactively manage comorbidities and monitor for side effects, often educating clinicians about condition interactions or treatment risks. Digital health was seen as both a barrier and an opportunity: electronic record systems were not interoperable, yet telehealth and AI tools offered promise for improving coordination and reducing travel burden.

Education and workforce issues were repeatedly raised. Consumers emphasised the need for arthritis education across all health professions, stronger GP competency, and more rheumatology nurses. Regional inequities in access to specialists were also a concern. Support services such as peer networks and evidence-based exercise programs were described as fundamental but underfunded, with international models like Bath's integrated programs cited as examples of best practice.

These accounts of systemic friction underscore that the primary barrier to health outcomes is often not a lack of treatment options, but a failure of translation. Consequently, a national research initiative must prioritise health services research to transform these fragmented touchpoints into a cohesive, evidence-based system of care.

> ***"It seems to me that there's room for frugal innovation, so developing ways that are more efficient to treat people and look at the economic and financial drivers of the right care. ...It's not just around commercialising some sort of intellectual property, because if you think about it we can commercialise those and generate a profit, but often it makes health care more expensive for the government. And so in some ways that's good for the person whose got the IP, but it may not be good for Australian society. In my experience there are examples of commercialisation which has been a bit malignant in the musculoskeletal space, thinking about opioids, gabapentinoids, surgical devices, spinal cord stimulators...we've got a history of where commercialisation's gone wrong... I think we need to go into this with our eyes open.***
>
> Professor Chris Maher AM, Director of the Institute for Musculoskeletal Heath; Professor in the School of Public Health at the University of Sydney

> ***"There are aspects of my life where my rheumatoid has affected me greatly that no one has ever asked me about. And yeah, and I bet everybody else is in the same position. So there is so much we're not looked at holistically. And I mean in holistically I mean, the whole person, the environment we live in, our work life, lives, sex, reproduction, money, the way systems work and don't work for us."***

3.2 Researcher Consultation

To complement the consumer perspective, leading researchers and clinicians were engaged in a 2-hour workshop (21 July 2025) and semi-structured interviews (28 July 2025, 6 August 2025). These discussions explored the vision for the future of AMSK healthcare, the primary obstacles to translating research into practice, and the infrastructure, capability, and collaboration needed to make progress. Key topics included funding and commercialisation pathways, workforce challenges, and mechanisms for fostering effective multi-disciplinary collaboration.

There was broad agreement that a fundamental barrier to better outcomes is a health system that is not designed to manage chronic, complex conditions. Researchers described a system driven by a "business model" that incentivises high-cost, low-value care, such as the overuse of imaging and certain surgical interventions. It was noted that a proportion of current medical care for AMSK conditions provides limited benefit, and that the system lacks the infrastructure to support evidence-based, preventative, and patient-centred models of care.

A primary theme was the challenge of a research ecosystem operating under significant structural pressure. Researchers highlighted systemic blocks, including inconsistent ethics and governance processes and difficulty with meeting recruitment targets that lead to the failure of a high percentage of clinical trials. The short-term nature of grant funding was cited as a major barrier to building the sustained infrastructure, such as funded research nurses and platform trials needed for long-term, impactful research. Workforce challenges, particularly in securing sustained funding for individuals (e.g., postdoctoral salaries) and building clinical-researcher career pathways for GPs and rheumatologists, were identified as significant barriers.

Researchers raised commercialisation and intellectual property (IP) as important considerations. Researchers highlighted examples of opioids, unnecessary imaging, and surgical devices, where commercial drivers have at times undermined evidence-based practice and led to poor outcomes. Commercialisation was

> ***"We've got an issue with research workforce, because if I look across at my colleagues in cardiovascular and cancer, they have many more opportunities – they have junior fellowships and grants which makes people competitive for investigative grant fellowships.***
>
> ***It seems to me that people working in the musculoskeletal space are working at a disadvantage when our colleagues have got this other system to prop them up. It's a really big challenge for succession planning, because there are people in the musculoskeletal space in Australia who are doing a great job, but they're not going to be around forever...***
>
> ***How do we get the next generation of people at that level if we don't have the same system as our colleagues in other disciplines have?"***
>
> Professor Chris Maher AM, Director of the Institute for Musculoskeletal Heath; Professor in the School of Public Health at the University of Sydney

understood as unlikely to be the principal pathway for impact across AMSK research; researchers highlighted that industry funding is typically tied to a company's pipeline and is unlikely to cover research projects focussed on models of care, workforce, and data integration. That said, targeted partnerships were noted to have the potential to accelerate translation when aligned with public value – for example, early-identification and recruitment pipelines can offer industry partners well-characterised patient cohorts and faster enrolment.

A recurring theme was the gap between what is known and what is done. Researchers called for a strategic focus on implementation research to ensure existing knowledge is used effectively. A key suggestion was the need for a sustainable mechanism to create and maintain the Living Guideline for the Pharmacological Management of Inflammatory Arthritis and the Living Guideline for the Management of Juvenile Idiopathic Arthritis. It was strongly felt that any research initiative must have a "razor-sharp focus" on policy, with the capability to use research to drive meaningful, systemic reform.

Beyond the core challenges, the discussions identified opportunities. The key challenges and proposed solutions are summarised below and in Figure 6.

Early diagnosis and targeted intervention: AI-enabled case-finding and decision support should be embedded in primary care to shorten time to diagnosis and reduce postcode-driven variation. Early detection must be linked to standardised pharmacological and non-pharmacological pathways that follow a life-course approach from prevention to advanced disease. The same infrastructure should connect eligible patients to clinical trials, so that early-stage cohorts can access emerging interventions.

Reducing systemic care variation: Diagnostics and care pathways should be standardised so that access to effective treatment does not depend on location or individual clinician expertise. Validated biomarkers and digital decision tools can improve diagnostic consistency across settings. Routine quality-assurance cycles should use platform data to identify gaps, monitor performance and drive targeted improvement.

Core research infrastructure: Australia needs a national, passive-capture data platform so patients and clinicians can contribute to research without extra burden. Existing registries and biobanking processes should be harmonised under a common data model with clear opt-in/opt-out options and streamlined multi-jurisdictional ethics. The platform should support qualitative research, genomics and precision medicine, and generate real-world evidence on outcomes, costs and equity.

Workforce development and capability: A clear fellowship pipeline, from junior through EMCR to senior levels, should be funded at a scale comparable to cardiovascular and cancer fields. Clinician-researcher pathways for GPs and rheumatologists need to be strengthened, alongside expansion of the rheumatology and allied health workforce. Lived-experience education should be embedded across medical and allied-health curricula, with careers stabilised through a blend of government, philanthropic and industry support.

Clinical research capacity in primary care and regions: Practice-based research networks should provide funding, tools and governance that make participation feasible for GP practices. Regional and remote services need basic infrastructure, training and ongoing support to host studies and contribute data. Building specialised skills in consumer engagement across these sites will improve recruitment, diversify cohorts and increase the real-world relevance of findings.

Translation and implementation: Proven models of care should be scaled using implementation science methods. Digital resources and clinical decision support should be integrated into EMRs and Health Pathways to embed best practice and reduce clinician burden. De-implementation strategies are needed to actively retire low-value care.

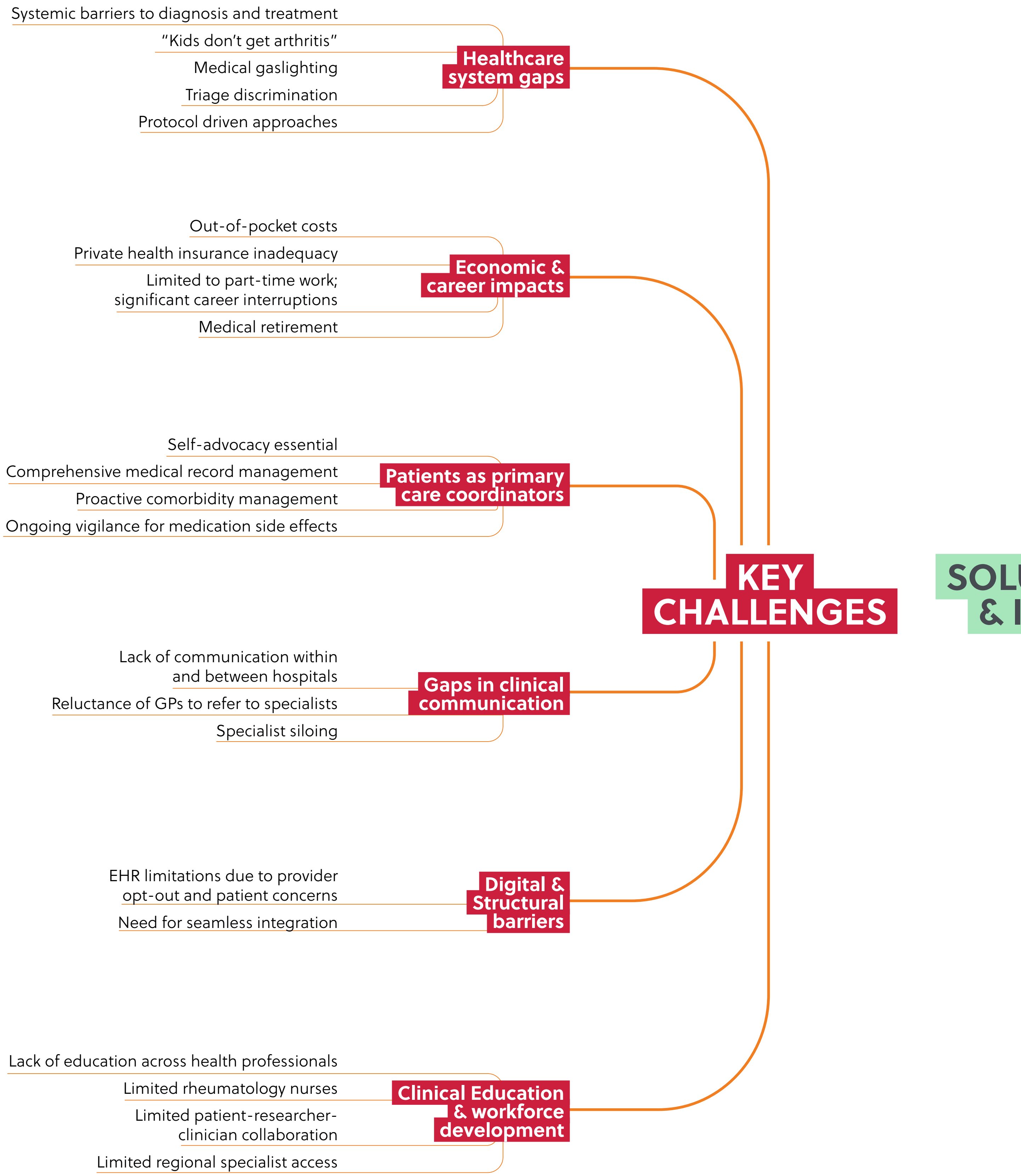
Funding system reform: Financial incentives must be aligned with evidence-based care. This includes updating MBS items, adjusting fee structures so guideline-concordant care is viable, and engaging private insurers to support comprehensive chronic care. Implementation support and robust health-economic cases should accompany reforms to demonstrate savings and productivity gains.

Environmental sustainability: De-implementation of low-value care should be linked to Australia's Net Zero goals. Priorities include reducing unnecessary procedures, avoidable travel and clinical waste, and reporting environmental benefits alongside clinical and economic outcomes.

There was strong agreement that a large-scale, strategic investment was required to move beyond isolated projects and build an integrated and impactful national research initiative.

The consistent themes that emerged from both focus groups were consolidated into a set of strategic pillars, which were then used as the criteria to evaluate the potential funding model

Figure 5: Consumer Focus Group: Key Challenges, Solutions and Ideas



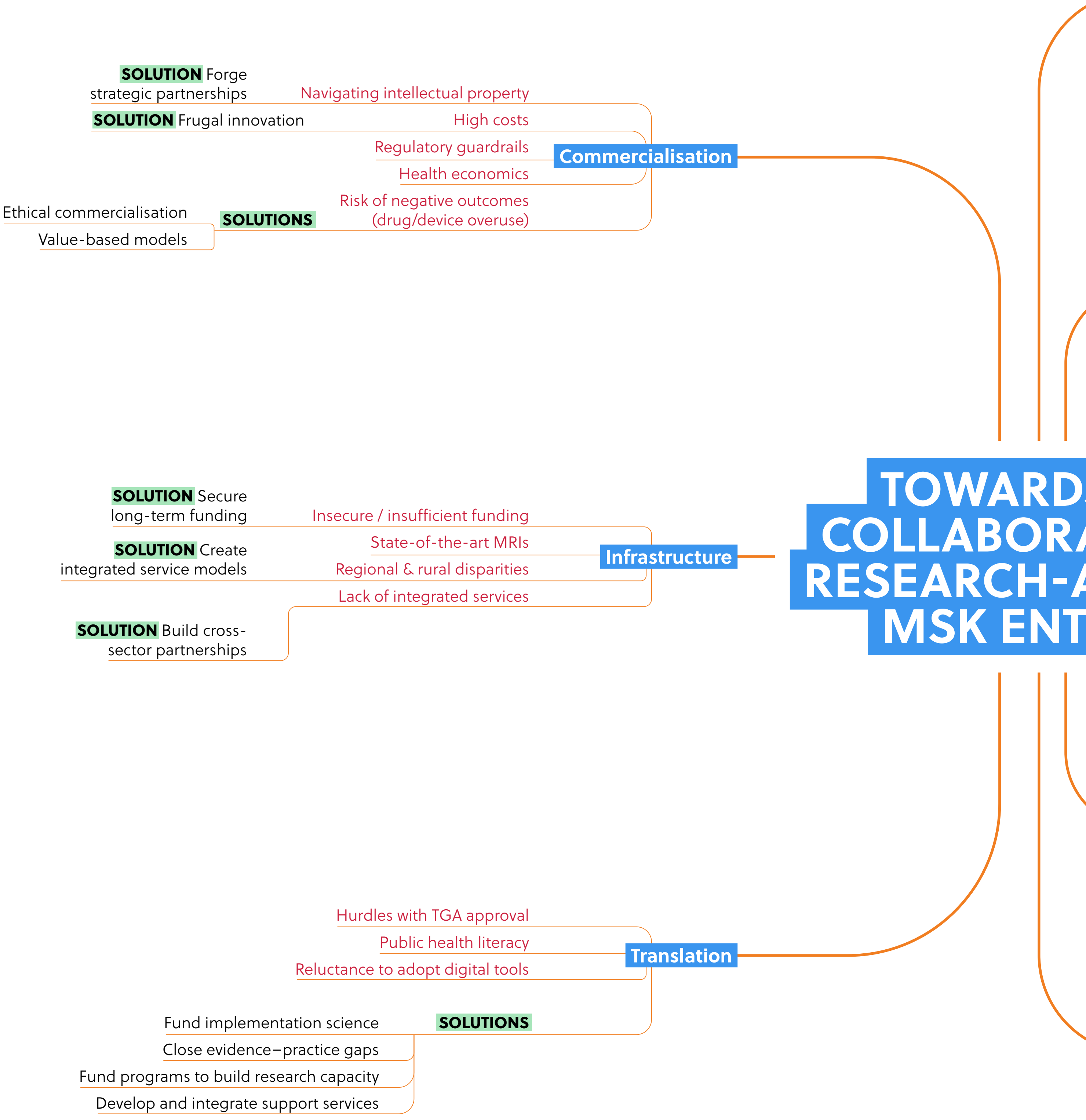
KEY CHALLENGES

- **Healthcare system gaps**
  - Systemic barriers to diagnosis and treatment
  - “Kids don’t get arthritis”
  - Medical gaslighting
  - Triage discrimination
  - Protocol driven approaches
- **Economic & career impacts**
  - Out-of-pocket costs
  - Private health insurance inadequacy
  - Limited to part-time work; significant career interruptions
  - Medical retirement
- **Patients as primary care coordinators**
  - Self-advocacy essential
  - Comprehensive medical record management
  - Proactive comorbidity management
  - Ongoing vigilance for medication side effects
- **Gaps in clinical communication**
  - Lack of communication within and between hospitals
  - Reluctance of GPs to refer to specialists
  - Specialist siloing
- **Digital & Structural barriers**
  - EHR limitations due to provider opt-out and patient concerns
  - Need for seamless integration
- **Clinical Education & workforce development**
  - Lack of education across health professionals
  - Limited rheumatology nurses
  - Limited patient-researcher-clinician collaboration
  - Limited regional specialist access

UTIONS
DEAS

- **Education & workforce development**
  - Integrate arthritis education in all health professional training
  - Regional access via telehealth and mobile clinics
  - Expand rheumatology nursing and GP upskilling
- **Improved care models**
  - Peer support programs
  - Patient-led care coordination with support infrastructure
  - Regional and remote service delivery innovation
    - Regional coordinators
    - Mobile specialist clinics
  - "One stop shop"
    - Evidence based exercise
    - 'Access to gyms & hydrotherapy pools
  - International best practice models - Bath
  - 'Triage system reform
- **Digital Health Reform**
  - Interoperable health records and optomised telehealth
  - Altools for education and pre-assessment
- **Research & Consumer Partnership**
  - Consumer-led priorities and governance
  - Integrated research networks and health economic modeling
  - Paid consumer participation
  - Consumer representatives on ethics committees
  - Research entity model development
- **Policy & System Reform**
  - Advocacy leveraging arthritis voter base
  - Funding equity, triage reform, and preventive care investment
  - Insurance reform to support chronic condition needs
  - Policy translation mechanisms

Figure 6: Researcher & Clinician Focus Group: Key Challenges, Solutions and Ideas



Commercialisation

Navigating intellectual property
SOLUTION Forge strategic partnerships

High costs
SOLUTION Frugal innovation

Regulatory guardrails

Health economics

Risk of negative outcomes (drug/device overuse)
SOLUTIONS
Ethical commercialisation
Value-based models

Infrastructure

Insecure / insufficient funding
SOLUTION Secure long-term funding

State-of-the-art MRIs

Regional & rural disparities
SOLUTION Create integrated service models

Lack of integrated services
SOLUTION Build cross-sector partnerships

**TOWARD
COLLABORA
RESEARCH-A
MSK ENT**

Translation

Hurdles with TGA approval

Public health literacy

Reluctance to adopt digital tools

SOLUTIONS
Fund implementation science
Close evidence–practice gaps
Fund programs to build research capacity
Develop and integrate support services

S A
ATIVE,
ACTIVE
ITY

Core Research
- Gaps in understanding symptoms
- Delayed diagnosis
- Reactive treatment models
- Lack of preventative strategies
- **SOLUTION** Increased funding
  - Symptom & implementation science; health economics research
  - Precision medicine
  - Genomics & biomarker discovery

Collaboration & Capabilities
- Potential grudges or "cliques"
  - **SOLUTION** Foster intersectional & cross-sector partnerships
- Competitive funding environment
- Limited capacity to engage in research
  - General Practitioners
  - Allied health
  - Consumers
  - **SOLUTIONS**
    - Fund capacity-building programs
    - Build dedicated GP research network
    - Develop and integrate support services
- Researcher career pipelines
  - **SOLUTION** Structured career pathways

Policy
- Strategic & regulatory alignment
  - Health Technology Assessment
  - National Health & Research Strategy
  - Strategic Examination of Research & Development
  - **SOLUTION** Conduct policy reform advocacy
- Under-representation of priority populations
  - **SOLUTION** Ensure equitable representation in all activities
- PBS & MBS safety nets
  - **SOLUTION** Drive funding and reimbursement reform

Consumers
- Care may not be patient oriented
  - **SOLUTION** Embed patient-oriented care in all activities
- Complexity of managing comorbidities
- "Postcode lottery"
  - **SOLUTION** Fund consistent models of care
- Carer needs overlooked
  - **SOLUTION** Ensure formal mechanisms for carer involvement

4 Systemic Gaps

While Australia has the expertise and infrastructure to deliver world-class AMSK research, outcomes are not being realised at scale. As summarised in figure 7, the systemic gaps undermining research impact are best understood as interrelated and mutually reinforcing rather than a simple linear sequence.

A mismatch between disease burden and research investment constrains progress from the outset, while translation and implementation gaps limit the impact of research that is produced. Commercial partnerships, although a potential source of investment and innovation, are not consistently aligned with public health priorities. Underpinning these challenges is a small research workforce, reducing capacity to generate and apply evidence at scale. The combined effect is a cycle of underinvestment, limited translation, and inequitable outcomes for consumers.

Figure 7: Systemic Gaps Undermining Research Impact

- MSK conditions are among the leading cause of disability in Australia yet lack a dedicated funded national research strategy.
- There is no dedicated nationally funded research strategy and there is limited dedicated research funding, leading to fragmented, short-term funding cycles.

- Promising Australian discoveries lack the large-scale funding to move through trials into clinical practice.
- Successful pilot programs are not scaled to become the national standard of care.

- A gap exists between the clinical guidelines and the funded, national rollout of the service models required to deliver them.
- Clinicians and health services are not given the training, resources, or incentives to implement new, evidence-based models of care.

- The absence of transparent frameworks to ensure industry partnerships deliver equitable benefits and maintain consumer trust.
- Stakeholders raised concerns about over-commercialisation, particularly in relation to pain medication and surgical interventions.

- Australia is facing a substantial shortage of rheumatologists, which directly constrains the pool of clinician-researchers available to lead and participate in AMSK research.
- Early-career researchers in AMSK fields face limited fellowships and short-term grants, creating a risk of attrition

OUTCOMES: Inequitable access and poor outcomes

- Access to high quality care is determined by postcode and not clinical need.
- Disparities disproportionately affect rural, regional, remote, and other priority populations.
- Consumers experience avoidable harm, ongoing pain and disability, and reduced quality of life due to systemic failures.

Without stronger pathways for prioritisation, implementation, and translation, the impact of existing and future research will remain constrained. In assessing the case for a national research initiative, we examined other plausible levers for addressing systemic gaps that have been successfully applied in other areas of health.

- **Direct health services reform,** such as the establishment of state-funded cancer centres such as the Victorian Comprehensive Cancer Centre, can directly improve access to care, but require intensive, state-by-state advocacy and risk perpetuating inequities if uptake is uneven.
- **National policy reform,** such as the rapid expansion of MBS telehealth items during COVID-19, demonstrates the potential of financial levels to shift practice nationally, but is politically challenging and requires robust economic data to secure adoption.
- **Workforce development,** such as mental health training programs delivered by Black Dog Institute, can improve quality of care and upskill clinicians and allied health professionals, but cannot overcome systemic funding barriers on its own.

There is already a strong evidence base for several effective AMSK models of care, particularly in osteoarthritis and low back pain (for example, programs modelled on the Osteoarthritis Chronic Care Program and other exemplars in section 2.5.1). While there is scope for development of novel approaches, the a significant current challenge is implementation at scale, not proving the concept again. Barriers repeatedly identified during stakeholder consultation include misaligned incentives (for example, MBS items that favour procedures over guideline-recommended conservative care), system readiness (data, digital infrastructure, and commissioning levers), workforce capacity and capability, and consumer awareness and access.

> ***"In all my years involved in exercise and delivery of programs, and particularly evidence-based programs, people can't get access to them, or they try to apply them in the real-world setting and they don't work or they're too costly…so people end up becoming frail and sarcopenic"***
>
> David Menzies, Health Justice Coordinator, member of the Scientific Advisory Panel for Arthritis Australia

> ***"We see so many things that come out with good evidence in clinical trials and then clinicians' hands are bounds through fee structures in that they can't actually provide them in a way that would be optimal in getting health outcomes"***
>
> Dr. Tasha Stanton, Associate Professor in Clinical Pain Neuroscience, University of South Australia

5 Funding Model Exploration

A scan of potential funding sources identified 8 potential investment models that would support a national research initiative in AMSK health. These models vary in their goals, governance, funding sources, and duration of support. A summary of each model's primary purpose and funding characteristics is provided in Table 5.

> ***"Australia has produced some of the world's leading research into the management of musculoskeletal conditions, developing innovative programs that are being implemented overseas and in the private sector and adapted for other chronic conditions. The Australian Government has the opportunity to leverage its investment in this research by funding its more widespread implementation and enabling health system cost savings while improving health outcomes."***
>
> Arthritis Australia, Parliament House Canberra 22 August 2024

Table 4: Models to support a national research initiative

	Model	Primary Goal	Funding Source	Funding	Duration
Funding stream	**ARC Centre of Excellence**	Support high quality groups of researchers working in areas of national and international importance.	Australian Research Council	\$1million - \$5 million per year	7 years
	MRFF Mission	Address national health challenges through strategic, translational research	Medical Research Future Fund	\$50 million - \$500 million	10 years
	NHMRC Centre of Research Excellence	Improve health outcomes and promote or improve translation of research outcomes into policy and/or practice.	National Health and Medical Research Council	\$3 million	5 years
	NHMRC Partnership Project	Answer a specific research question to influence health and wellbeing through changes in the delivery, organisation, funding and access to health services.	National Health and Medical Research Council	\$1.5 million from NHMRC plus at least matched funding from industry partner.	5 years
Entity	**Cooperative Research Centre**	Solve industry identified problems and improve the competitiveness, productivity, and sustainability of Australian industries,	Department of Industry, Science, and Resources	\$21million - \$87 million	10 years
	Medical Research Institute	Drive innovation in healthcare to improve the lives and livelihoods of people in Australia and globally.	Mixed – competitive grants, industry funding, philanthropic donations.	Varies widely (\$10 million – \$100+ million annually)	Ongoing
Entity or collaboration	**Centre of Excellence** (Based on National Centre of Excellence in Intellectual Disability Health (NCEDIH)	National coordination to improve outcomes through implementation, training, policy advice and research translation.	Department of Health and Aged Care	~\$20-30 million (DoH committed \$23.9 million for NCEIDH)	4-10 years (NCEIDH originally funded for 4 years)
Collaboration	**Virtual Research Institute**	Bring together a community of researchers across multiple organisations, to enhance collaboration on national and international science priorities.	Mixed – competitive grants, industry funding, philanthropic donations.	Depends on scale and scope.	Depends on funding commitment.

The following sections present more detailed descriptions of the models, including a non-exhaustive list of key strengths and challenges as identified through the landscape and evidence review as well as stakeholder consultations.

5.1 Australian Research Council Centre of Excellence

Australian Research Council (ARC) Centres of Excellence are large-scale collaborations that bring together leading researchers with government, industry, and international partners to address areas of national priority. They aim to undertake innovative, potentially transformational research, strengthen Australia's global research standing, and tackle major challenges through cross-sector partnerships. ARC Centres of Excellence also focus on building human capacity by providing high-quality training environments for postgraduate and postdoctoral researchers. Funding is awarded periodically to host organisations, supporting centres that generate new knowledge, foster networks, and create broader community and policy impact.

Strengths	**Challenges**
Provides large-scale, long-term investment (up to $35M over seven years). Strong emphasis on training, early career researcher development, and technology advancement. Encourages collaboration across universities, services, government, and consumer groups. Focuses on translation and real-world application. Can support scaling of service models and new delivery approaches.	Lengthy lead times for establishment and approvals. Timeframes to achieving impact are unpredictable and often lengthy – impact could arise decades after the research has been conducted and may not generate a market return that can be quantified within a timeframe that can be attributed (with some degree of certainty) to the research funding[62].

5.2 Medical Research Future Fund Mission

The Medical Research Future Fund (MRFF) was established through the *Medical Research Future Fund Act 2015* and has the aim of transforming health and medical research and innovation to improve lives, build the economy, and contribute to health system sustainability. The MRFF was created to be a perpetual fund capable of generating income over the long term, with the purpose of providing grants to support medical research and medical innovation. The Future Fund invests this money so it provides a steady stream of income (interest). Each year the Future Fund Board of Guardians decides how much money to use for health and medical research. This amount is made available for the Government to spend on medical research projects.

As of 31 March 2025, the fund has achieved a nominal average yearly rate of return of 4.9% since inception, growing to $24 billion. Since the inception of the MRFF in 2015 to 24 September 2025, over $4.3 billion in funding has been granted through 1766 grants. Currently, $650 million is released each year, however there is strong advocacy from the sector to release all available funds.

MRFF investments are guided by the Australian Medical Research and Innovation Strategy and the Australian Medical Research and Innovation Priorities. The MRFF funds research around four key themes:

1. **Patients:** aims to bring benefit to patients, including supporting life-changing clinical trials, funding innovative treatments and advanced health care and medical technologies.
2. **Researchers:** supports Australian researchers, including to help build their skills and capacity, support their research in priority areas and assist them to develop and bring new research discoveries to the market.
3. **Research translation** aims to translate research outcomes into practice, by building the evidence base to support the adoption of best practice care into health delivery.
4. **Missions:** large programs of work that bring together key researchers, health professionals, stakeholders, industry partners and patients to tackle big health challenges.

The MRFF Mission model provides a clear mechanism to address Australia's underinvestment in AMSK conditions. Missions offer large-scale, dedicated, multi-year funding streams that combine research, implementation, consumer engagement, and workforce development. There are currently 10 MRFF Missions[ix], which have provided the scale and coordination necessary to translate research into tangible health outcomes across high priority health areas including traumatic brain injuries, cardiovascular disease, mental health, and genomics. The existence of the Million Minds Mental Health Mission shows the MRFF already backs missions where the principal gains are reductions in disability, pain and productivity loss rather than mortality - an important precedent for an AMSK mission.

> ***"What we're hearing when we talk to the government is we need someone, we need one voice so we can get that message out there effectively, undiluted, unpolluted, about what is needed, where to try and improve outcomes and be most efficient. …That's something a Mission should be doing"***
>
> Dr Helen Keen, Adjunct Professor at Murdoch University, Western Australian lead for A3BC.

An AMSK **Mission** would bring research onto a more equitable footing with other major disease areas, enabling coordinated national investment to address evidence gaps, trial new models of care, and reduce the substantial burden of these conditions.

[ix] An overview of the current MRFF Missions, including the number of funded projects and total grant value, can be found in Appendix E.

Current AMSK applications: The Dementia, Ageing and Aged Care Mission and Stem Cell Therapies Mission provide grants to support AMSK research.

Strengths	Challenges
Provides large-scale, long-term Commonwealth funding (typically 10+ years) across the research pipeline, from discovery to implementation.	Establishment is not through open application; it requires a government decision to initiate or extend a Mission and define grant rounds.
Aligns directly with national priorities such as the National Strategic Action Plan for Arthritis and the National Preventive Health Strategy.	Funding scope is determined at the policy level, with priorities and timelines shaped by government processes.
Roadmaps and Implementation Plans can embed consumer engagement, capacity building, and national coordination	Access to funding is influenced by national policy direction and political context, which may affect timing and scale.
Can leverage existing infrastructure and virtual institutes, reducing the need for new physical infrastructure.	

5.3 NHMRC Centre of Research Excellence

The NHMRC funds high quality health and medical research to build research capability, support researchers, encourage the translation of research into better health outcomes and promote the highest ethical standards for health and medical research.

The Centres of Research Excellence (CRE) scheme provides support for teams of researchers to pursue collaborative research and develop capacity in basic science research, clinical research, health services research and public health research. The intended outcomes of the CRE scheme are to support the conduct and development of innovative, high quality, collaborative research, promote effective translation of research into knowledge gain, health policy and/or practice, foster and build capacity and capability in the health and medical research workforce, and provide opportunities to expand and improve collaborations between research teams.

Current AMSK applications: Australia & New Zealand Musculoskeletal Clinical Trials Network (ANZMUSC)

Strengths	Challenges
Provides leadership, training, and translation within a defined theme.	Smaller scale limits ability to achieve full national coordination.
Recognised NHMRC structure lends credibility and influence.	Focus is research rather than infrastructure or service delivery.
Can be embedded within a university, MRI, or existing network.	Highly competitive funding scheme with success rates of ~10–15%[63].
Can provide a foundation for broader investment or future entities.	
Generates evidence, clinical guidelines, and policy influence.	

5.4 NHMRC Partnership Project

The Partnership Project funding scheme provides funding and support to create new opportunities for researchers and policy makers to work together to define research questions, undertake research, interpret the findings and implement the findings into policy and practice. Partnership Projects create partnerships among decision makers, policy makers, managers, clinicians and researchers, and aim to answer a specific research question to influence health and wellbeing through changes in the delivery, organisation, funding and access to health services.

Strengths	Challenges
Designed for real-world impact through collaboration with health services, government, and consumer partners. Recognised NHMRC structure lends credibility and influence. Supports testing and scaling of service models and piloting new approaches. Offers faster pathways to implementation compared with discovery research grants, with multiple submission cycles each year.	Requires committed partner contributions at the proposal stage, which may take time to secure. Smaller in scope than a CRE or Mission; typically focused on a single project. May not provide core infrastructure or capacity-building functions. Highly competitive funding scheme with success rates of ~10–15%[64].

5.5 Cooperative Research Centre (Department of Industry, Science, and Resources)

The Cooperative Research Centres (CRC) Program supports long-standing, industry-led collaborations to address sector-identified problems and improve national competitiveness. CRC Grants fund medium- to long-term partnerships (up to 10 years, no set funding cap), while CRC Project grants support shorter-term collaborations (up to three years, capped at $3 million). Both streams require industry and research partners, ensuring strong cross-sector engagement. The program aims to lift industry–research collaboration, drive innovation and commercialisation, and build workforce capability through targeted training and education.

Current AMSK applications: Digital Health CRC has supported AMSK care by advancing digital health innovation.

Strengths	Challenges
Supports large, multi-stakeholder collaborations spanning health, technology, and policy. Provides a platform for linking research with workforce, digital health, and system reform. Government co-funding encourages substantial partner cash and in-kind contributions.	Requires significant co-investment from non-academic partners and a clear economic or industry outcome. Establishment is complex, involving new governance, operating models, and intellectual property arrangements. Proposals must align with multiple government portfolios, not just health.

5.6 Medical Research Institute

A Medical Research Institute (MRI) is a permanent entity with physical infrastructure, staff, and governance to support long-term research, translation, and leadership. MRIs provide stability for workforce development, attract diverse revenue streams (grants, philanthropy, commercial partnerships), and can host or lead national funding initiatives such as MRFF Missions or NHMRC grants. They offer strong visibility and international collaboration opportunities but require significant upfront investment and a sustainable operating model.

Current AMSK applications: Garvan Institute of Medical Research has various AMSK labs, programs, projects.

Strengths	**Challenges**
Provides a permanent base for AMSK research, translation, and leadership.	Requires significant upfront investment in facilities, staff, and governance.
Enables long-term workforce development and research continuity.	Sustainability relies on diversified revenue streams (grants, philanthropy, commercialisation).
Can host or lead national funding initiatives such as MRFF Missions or NHMRC grants.	Risk of duplication unless well integrated with existing MRIs, universities, and health services.
Strong platform for international partnerships, philanthropy, and advocacy.	Less agile than grant-based models; requires a strong operating and fundraising framework.

5.7 Centre of Excellence (Department of Health)

A Department of Health–funded Centre of Excellence would provide multi-year operational funding to coordinate research, policy, and translation activities at a national level. This model has precedents in other areas, such as the **Centre of Excellence in Intellectual Disability Health** and the **National Allergy Centre of Excellence**, which work in close collaboration with government and peak bodies to address service gaps, inform national policy, and strengthen workforce capacity. For AMSK health, such a Centre could act as a focal point for coordinating research and service innovation, providing clinical resources, data and reporting, and supporting collaboration across jurisdictions.

Strengths	**Challenges**
Provides operational, multi-year funding for coordination and translation, complementing NHMRC CREs. Commonwealth endorsement enables national reach across jurisdictions and sectors. Flexible remit, including training, policy advice, small grants, and data/reporting. Can leverage existing infrastructure.	Requires ministerial decision and political support. Governance and policy processes may take time to establish. Risk of duplication if not well integrated with CREs, universities, or existing research programs.

5.8 Virtual Research Institute

A Virtual Research Institute is a coordinating entity that connects researchers, clinicians, consumers, and service partners across existing sites and infrastructure. VRIs provide a platform for shared governance, data, methods, and collective grant bids, without the costs of establishing new facilities. They can be created independently or linked to an NHMRC CRE or similar funding source, as demonstrated by ANZMUSC. VRIs offer flexibility and low overheads but rely on securing sustainable funding and strong institutional buy-in.

Current AMSK applications: Institute for MSK Health (USyd + Sydney LHD collaborative research hub).

Strengths	Challenges
Can be established quickly with relatively low overheads by leveraging existing infrastructure. Provides a mechanism for national coordination, shared methods/data, consumer engagement, and joint bids for larger grants. Potential to evolve into larger entities (e.g., MRI or Centre of Excellence) if scale and need increase.	Most funding is project-based, making it difficult to secure ongoing operational support. Requires governance structures that balance inclusive participation with effective decision-making. Achieving institutional buy-in across MRIs, universities, and local health districts may be challenging.

5.9 International Examples

Several countries have established large-scale initiatives to coordinate AMSK research, build infrastructure, and strengthen translation into practice. These provide useful points of comparison for Australia.

5.9.1 Canadian Institute of Health Research, Institute of Musculoskeletal Health and Arthritis (CIHR IMHA)

The CIHR Institute of Musculoskeletal Health and Arthritis (CIHR-IMHA) is the hub for strategic initiatives in AMSK, skin and oral health research in Canada[65]. It has a broad mandate, from alleviating pain to mobilising digital health and developing research leaders and exemplifies how a national institute can coordinate investment across multiple disciplines under a unified AMSK strategy.

5.9.2 National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) (United States)

Part of the National Institute of Health, NIAMS supports research into causes, treatment, and prevention of AMSK and skin diseases, alongside training for basic and clinical scientists and dissemination of research progress[66]. With an enacted budget of USD 685 million in FY2025, NIAMS highlights the role of a dedicated national institute in sustaining long-term AMSK research capacity.

5.9.3 Research Centre for treatment of rheumatic and musculoskeletal diseases (REMEDY) (Norway)

The REMEDY Centre is dedicated to advancing research that improves patient care in rheumatology and AMSK disorders, offering significant benefits for both individuals and society as a whole[67]. The core mission of REMEDY is to develop exceptional treatments and strategic approaches to these health issues by employing a comprehensive research methodology. REMEDY conducts research across 7 "work packages" (research streams), including optimised medical interventions, phenotyping for personalised medicine, pain mechanisms and management, managing comorbidities, innovative approaches to remote care, deciphering long-term outcomes (including work participation and health economics), and empowering individuals.

REMEDY includes a national clinical network of hospital departments and rehabilitation institutions, which aims to strengthen national collaboration, facilitate communication between different units, contribute to the implementing of results in clinical practice., and contribute to new research projects through collaboration. The network also provides consumers across Norway the opportunity to participate in multi-centre studies.

5.9.4 Utrecht Osteoarthritis Research (Netherlands)

The Utrecht Osteoarthritis Research (UROAR) group, recognised as a Research Centre of Excellence by ReumaNederland, investigates osteoarthritis from underlying mechanisms to patient-centred treatment strategies. Adopting a translational approach, UROAR links laboratory research with clinical care to develop diagnostic tools and tailored therapies that improve effectiveness and reduce side effects. Its work spans in vitro studies, in vivo models, and clinical trials, with a commitment to ethical practices and reducing reliance on animal models. Through national and international collaborations, the group has driven innovation resulting in patents and the creation of spin-off companies including ArthroSave and SynerkinePharma[68], highlighting its role in advancing sustainable and consumer-focused treatment options.

5.9.5 Arthritis UK (United Kingdom)

Formed in 2018 through the merger of Arthritis Research UK and Arthritis Care, Arthritis UK is a major non-profit that invests over £30 million annually in AMSK research and services[69]. It supports centres of excellence across universities and hospitals, drives public advocacy, and provides consumer-facing support. It illustrates the value of an independent charity working alongside government to accelerate research and service reform.

Musculoskeletal Translational Research Collaboration (UK MSK TRC)

Established through NIHR and Versus Arthritis, the TRC brings together 17 centres across the UK to align translational AMSK research, with £26.3 million in government funding allocated in 2023/24. The TRC integrates clinical research facilities, biomedical research centres, and national networks, and is governed through academic-clinical partnerships. It demonstrates how a national initiative can pool resources, reduce duplication, and accelerate translation of evidence to patient benefit.

6 Model Evaluation

6.1 Strategic Pillar Analysis

Drawing on insights from the landscape review, stakeholder consultations, and feasibility analysis, six **strategic pillars** were identified as essential for a national research initiative to deliver meaningful and sustainable impact (Table 5).

To ensure these pillars reflect not only stakeholder priorities but also broader government agendas, we mapped them against current national strategies and frameworks, including the MRFF Priorities, NHMRC Priorities, the Productivity Agenda, the National Digital Health Strategy, the National Science and Research Priorities, and the Health and Medical Research Strategy. This mapping confirmed strong alignment, supporting the validity and sustainability of the pillars as a framework for assessing investment options. The full table of this alignment is provided in the Appendix F.

Table 5: Strategic Pillars

Collaboration and Engagement: The ability to foster effective collaboration between consumers, researchers, clinicians, and international partners, including establishing ethical frameworks for engagement with industry and managing conflicts of interest. The capacity for meaningful consumer involvement and leadership in governance, priority setting and research design.
Funding and Sustainability: The scale, stability, and source of funding; the long-term viability of the initiative. Supported by independent cost benefit analysis.
Health Innovation Potential: Health innovation refers to the development and implementation of new or improved health policies, practices, systems, products, technologies, services, and delivery methods that aim to improve healthcare efficiency, effectiveness, quality, sustainability, safety, and/or affordability
Research and Evidence Generation: The capacity to fund, connect, and support high-quality research at scale.
System and Policy Influence: The ability to influence national health policy and investment, improve care models and clinical guidelines, and align with productivity and sustainability goals across the health system; advocating for policies that address the social, environmental, and commercial determinants of health.
Workforce and Capacity: The capacity to educate, train, and develop a skilled and sustainable workforce (including researchers, clinicians, and allied health professions), and to improve workforce participation across the general population by reducing disability, early retirement, and productivity loss associated with AMSK conditions.

At Arthritis Australia's request, the analysis initially focussed on the MRFF Mission, the DoH funded Centre of Excellence, and the Virtual Research Institute (VRI) – the VRI was specifically referenced in the 2019 National Strategy, and was a priority model for Arthritis Australia. While the VRI offers strong alignment with collaboration and engagement goals, its structural and financial limitations, namely the lack of clear funding path, present a significant challenge. This information was provided to Arthritis Australia, and it was agreed that the NHMRC CRE would be assessed in the feasibility analysis. The mapping demonstrates that while each model has significant strengths, the MRFF Mission is the only model that rates 'High' across all six strategic pillars. Specifically, it is the only model with the requisite scale of funding, the potential for broad health innovation, and the capacity to directly influence national system and policy.

Table 6: Strategic Fit Analysis

Pillars		MRFF Mission
Funding and Sustainability The scale, stability, and source of funding; the long-term viability of the initiative. Supported by independent cost benefit analysis.	High	Large-scale (~$50M+), funding (once approve
Collaboration and Engagement The ability to foster effective collaboration between consumers, researchers, clinicians, and international partners, including establishing ethical frameworks for engagement with industry and managing conflicts of interest. The capacity for meaningful consumer involvement and leadership in governance, priority setting and research design.	High	Formal structures and enable sector-wide pa stakeholder inclusion.
Health Innovation Potential Health innovation refers to the development and implementation of new or improved health policies, practices, systems, products, technologies, services, and delivery methods that aim to improve healthcare efficiency, effectiveness, quality, sustainability, safety, and/or affordability	High	Can fund bold system including, "blue-sky" r infrastructure, and tec care at scale.
Research and Evidence Generation The capacity to fund, connect, and support high-quality research at scale.	High	Can support large-sca research initiatives anc
System and Policy Influence The ability to influence national health policy and investment, improve care models and clinical guidelines, and align with productivity and sustainability goals across the health system; advocating for policies that address the social, environmental, and commercial determinants of health.	High	Backed by governmen to policy.
Workforce and Capacity The capacity to educate, train, and develop a skilled and sustainable workforce (including researchers, clinicians, and allied health professions), and to improve workforce participation across the general population by reducing disability, early retirement, and productivity loss associated with AMSK conditions.	High	Can fund large-scale f workforce developmer investment in models interventions that redu work disability.

		COE		CRE
long-term ed).	Med-High	Potential for stable, ongoing operational funding from the government, though likely at a smaller scale than a Mission.	Low	Defined by its fixed-term ($3M over 5 years) funding cycle, with no long-term infrastructure or continuity funding.
funding rtnerships and	High	Strong within core partners; may struggle with national breadth or sector neutrality.	Medium-High	Designed to build interdisciplinary research capacity in priority areas and support a team of investigators to pursue a focused research agenda and train future leaders.
-wide innovation, research, digital hnology-enabled	Medium-High	Good for service innovation aligned to DoH priorities, but narrower in scope.	Medium	Can support applied research and service innovation confined to specific research niche; implementation capability is limited.
le national d trials	High	Can fund focused research within a defined scope and limited budget.	Medium	CRE can generate high-quality research within a focused area and at a smaller scale.
t with direct lines	High	As a DoH-funded entity, it would be an obvious source for expert advice and would be expected to inform policy directly.	Medium	May influence via evidence generation and networks, but no formal policy role.
ellowships and nt. Enables of care and uce AMSK-related	High	Training and workforce development may be a core focus. Potential to contribute to workforce participation - impact may be focussed within specific area.	Medium-High	Strong emphasis on building research capacity and training PhDs/postdocs, may include projects to increase workforce capacity.

6.2 Feasibility analysis

The MRFF Mission, the Department of Health (DoH) funded Centre of Excellence, and the NHMRC CRE were assessed across both establishment and implementation and operations phase; risks and opportunities were mapped to the six strategic pillars. Each item was rated for **likelihood** and **impact** to generate a risk score and action flag (e.g., Barrier, Significant, Mitigate, Watch). The detailed ratings and proposed actions are in **Appendix H.**

6.2.1 Cross-cutting observations

Across all models, securing broad-based stakeholder support emerged as a critical factor for success. Without visible alignment from consumers, clinicians, researchers, and policymakers, even well-designed proposals risk fragmentation or limited uptake. Consumer integration into governance and priority setting was repeatedly identified as essential to build legitimacy and ensure relevance.

Sustainability of funding is another shared concern. While the models vary in scale and duration, each faces challenges in maintaining long-term investment beyond initial commitments. For smaller or time-limited models, this is particularly acute, as the risk of discontinuity could undermine workforce development and the translation of outcomes into practice.

Implementation capacity also represents a common constraint. Many models are strong at producing research but have limited mechanisms to drive adoption into health services, policy, or practice. Without clear pathways to translation and scale-up, research outputs risk remaining isolated rather than contributing to systemic change.

Finally, workforce development was consistently highlighted as both a risk and an opportunity. A sustainable pipeline of AMSK researchers, including early- and mid-career investigators, will be critical to deliver on the ambitions of any chosen model. Programs that embed training, mentorship, and career pathways were seen as more likely to create enduring impact.

- **Collaboration and Engagement:** National consensus and representative governance are recurring establishment risks for large models (Mission, CoE). Early coalition-building with consumers, clinicians, and research leaders is a high-value opportunity in all models.
- **Funding and Sustainability:** Long-horizon, reliable funding is strongest under a Mission or CoE; sustainability is a known limitation for time-limited NHMRC schemes.
- **Health Innovation Potential:** Missions offer the broadest scope to fund discovery-to-implementation, including digital and system reform. CREs and Partnership-style programs can pilot targeted innovations but are narrower in scale.
- **Research and Evidence Generation:** All models can generate high-quality evidence; only the Mission and, to a lesser extent, a CoE, are structured to coordinate national priorities and reduce duplication at scale.

- **System and Policy Influence:** Commonwealth-backed mechanisms (Mission, CoE) have clearer pathways to guideline and policy impact; CREs influence via evidence and networks; a VRI requires external legitimisation to achieve system-level effect.
- **Workforce and Capacity:** Missions and CoEs can sustain fellowships and national skills pipelines; CREs can seed future leaders.

6.2.2 Model-specific findings

6.2.2.1 MRFF Mission

An MRFF Mission presents the strongest vehicle for national coordination and research translation but carries important establishment risks. The most significant challenges include achieving national consensus on the Mission's focus, ensuring the steering group is representative, and maintaining political support in the face of competing health priorities. At the same time, a Mission offers unmatched opportunities, such as supporting large-scale national trials, funding system reform and digital innovation, creating sustainable research fellowships, and shaping clinical guidelines and high-value care adoption. With early attention to governance and consensus-building, the Mission could provide the most comprehensive platform for impact.

- **Key establishment risks:** failure to reach national consensus on focus; non-representative steering group; competing health priorities.
- **Opportunities:** scale funding for blue-sky research and system innovation; large national trials; research fellowships to build workforce; influence on policy and high-value care.
- **Implication:** Strongest vehicle for national coordination and translation, provided early consensus and governance are secured.

6.2.2.2 Centre of Excellence

A Centre of Excellence funded by the Department of Health provides a strong mechanism for coordination and policy engagement, supported by Commonwealth credibility and stable funding. Its success, however, depends on demonstrating a clear distinction from existing institutes and securing a senior government champion to drive support. When established effectively, a CoE can serve as a national expert body, fund high-quality research aligned to government priorities, and test innovative care models in collaboration with state health systems. Its influence is strongest when scope is well defined and integration with existing entities prevents duplication.

- **Key establishment risks:** insufficient distinction from existing entities; absence of senior champion.
- **Opportunities:** national expert body with sustained funding; test innovative care models with states.
- **Implication:** Powerful for focused coordination and policy interface; requires clear scope, championing, and integration to avoid duplication.

6.2.2.3 NHMRC Centre of Research Excellence

The NHMRC CRE model is well suited to generating high-quality evidence and fostering collaboration across researchers and clinicians, with added strengths in training future leaders. Its limitations are primarily structural: funding is time-limited, the scope may be too narrow to support national coordination, and translation into practice depends on external mechanisms. A CRE can establish a focused research agenda, enable high-impact studies addressing national or clinical gaps, and provide valuable fellowships that strengthen workforce capacity.

- **Primary constraints:** time-limited funding dependency narrow scope may limit national/system relevance.
- **Opportunities:** define a sharp research agenda to enable high-impact focused studies; develop future leaders via fellowships.
- **Implication:** Strong platform for evidence generation and capacity; less suited to whole-of-system coordination.

6.3 Cost-Benefit Analysis

The model evaluation is supported by an independent cost-benefit analysis, conducted by HTAnalysts. This analysis seeks to quantify and compare the relative value of the Mission, Centre of Excellence, and Centre of Research Excellence, integrating insights from the strategic fit analysis to identify which model delivers the strongest return on investment or cost-benefit ratio and best aligns with long-term system and health priorities.

The strategic fit analysis qualitatively evaluates the extent to which the models align with the strategic pillars; the CBA provides an evaluation of the models across quantitatively measurable pillars: workforce and capacity, collaboration and engagement, research and health impact generation (combining research and evidence generation and health innovation potential), and funding and sustainability. The incremental analysis followed Australian Centre of Evaluation guidance[70].

Results showed that the CoE ($1: $4.66) and MRFF Mission ($1: $4.61) generated the greatest benefit per dollar invested, followed by the CRE ($1: $4.15). All future benefits were discounted at 5% per annum[71].

Table 7: Summary of Cost-Benefit Analysis results by Investment Model

Investment Model	NHMRC Centre of Research Excellence	Department of Health Centre of Excellence	Medical Research Future Fund Mission
Summary			
Total Investment	$3,000,000	$25,000,000	$100,000,000
Years	5	4	10
Net benefit (NPV)	$12,438,297	$116,565,233	$460,898,318
CBR per $1 invested	$4.15	$4.66	$4.61
Net Return	$9,438,297	$91,565,233	$360,898,318
Collaboration and engagement			
Value generated (NPV)	$601,900.28	$9,461,381.70	$26,805,892.56
CBR	**$0.20**	**$0.38**	**$0.27**
Funding and sustainability			
Annual publication rate	6.97	72.59	116.15
Stability benefits	5%	10%	20%
Value generated (NPV)	$3,979,977.89	$36,021,260.75	$134,283,127.67
CBR	**$1.33**	**$1.44**	**$1.34**
Research generation and health impact			
Reduced time between research and impact	6%	12%	29%
Value generated (NPV)	$5,476,557.86	$47,733,204.30	$218,455,531.55
CBR	**$1.83**	**$1.91**	**$2.18**
Workforce and capacity			
Net FTE created per $1m/y	5.59	6.42	6.42
FTE per investment	3.35	40.15	64.24
Value generated (NPV)	$2,379,860.98	$23,349,385.77	$81,353,766.21
CBR	**$0.79**	**$0.93**	**$0.81**

6.3.1 Collaboration and Engagement

All models enhance external grant success, reduce research waste, and drive GDP spillovers through increased private research and development72,73,74. Federal research funding attracts increased external funding. Based on the strategic fit analysis, Missions and CoEs are rated high impact with a CREs rated moderate impact. The CoE option produces the largest per-dollar benefit ($0.38), followed by Mission ($0.27) and CRE ($0.20). P

Collaboration and engagement effects were modelled through three channels: external co-funding, reduced research waste, and GDP spillovers. Evidence shows that $1 of public research funding typically attracts an additional $1.23, increasing to $1.41 in structured programs[75]. After accounting for baseline university co-funding (1.18), incremental uplifts were applied, with Missions and CoEs assumed to attract higher leverage than CREs. Reviews of MRFF Mission funding have reported similar co-funding activity. The Cardiovascular Health Mission reported $154 million; Dementia, Ageing and Aged Care Mission[76] reported $22 million, and the Genomics Health Futures Mission reported $55 million[77]. Overall, this equates to a 25% increase on MRFF funding received to date, which aligns with other published evidence.

Models with a high collaboration and engagement impact were estimated to have 27% additional value generated from co-funding, compared to 5% for those with low impact. Research waste, which accounts for up to 85% of lost value in unstructured programs[78], was reduced by 15% for Missions and 5% for CRE due to greater coordination and data-sharing, according to the strategic fit analysis. Broader GDP spillovers were applied at 15–20% per annum based on international evidence[79] , scaled by program type, with Missions assumed to generate the strongest effect. Benefits were estimated annually, accumulated over each program's funding horizon, and expressed in NPV terms.

6.3.2 Funding and Sustainability

Programmatic investments increase research output, stabilise funding which reduces wastage, and create value that extends beyond the initial investment period80,81,82. The CoE yields $1.44 per dollar invested, the Mission $1.34 and the CRE $1.33.

Funding sustainability was evaluated through scale, stability, and long-term viability. For scale, publication outputs were modelled at 11.6 publications per $1 million invested83 , with a value of $125,812.50 per publication. Annual publication rates were estimated at 7 for CRE, 73 for CoE, and 116 for Mission, in accordance with the average total investment per year for each model. Stability benefits were calculated as efficiency savings from reduced "stop–start" cycles associated with sporadic funding of research, assumed at 10% value for CoE, 5% for CRE, and 20% for Mission, based on the duration of funding and consistent with strategic fit and PwC base estimates84 of funding inefficiency. Long-term viability accounted for continuation of infrastructure, partnerships and research beyond the funded period. This was modelled as probability-weighted continuation values of 69% for CoEs, 23% for CR), and 98% for Mission, amortised over 10 years in line with the principle that larger and longer funding is more likely to lead to new or continued investment in the future. All values were discounted at 5% to estimate sustainability-adjusted NPVs.

6.3.3 Research Generation and Health Impact

Enhanced collaboration reduces the lag between research spend and health gains, accelerating benefits through clinician, researcher and consumer co-design and faster guideline adoption85. AMSK research yields substantial productivity gains and improves workforce participation across the general population, driven by the heavy burden of AMSK86. Based on the strategic fit matrix and prior work in estimating future gains in health benefit due to research, the Mission model is expected to generate the highest benefit per dollar ($2.18), followed by CoE ($1.91) and CRE ($1.83)87.

The value of improved health outcomes was assessed through direct health impacts and translation acceleration. Direct health impacts, including reductions in mortality, morbidity, and healthcare costs, were derived from a Deloitte Report[88] which quantified the economic benefits of health and medical research in Western Australia. These estimates were applied to AMSK research, assuming proportional scaling of health system impacts. Translation acceleration was incorporated to reflect earlier realisation of benefits due to structured research design, co-production with consumers and clinicians, and rapid guideline adoption. International evidence[89] suggests that benefits are typically realised over a 16-year lag and research outcomes can impact health outcomes for over 15 years[90].

Further, longer term funding security enables design of larger, more robust studies that deliver translational health outcomes and greater impact9192. Considering both the strategic fit matrix and duration of funding, structured programs shorten the time between research and health impact by 12% for CoEs, 6% for CREs, and 29% for Missions (in accordance with strategic fit). Productivity effects, estimated to be equal to 80% of direct health gains93 were added to healthcare cost offsets to reflect societal benefits. Values were discounted at 5% to obtain NPV estimates for each program.

6.3.4 Workforce and Capacity

Larger, longer-term, and structured investments can support a larger workforce94. The strategic fit analysis suggests CoE and Mission models have the highest impact, with CRE moderately lower. CoE delivers the greatest benefit per dollar invested ($0.93), followed by the MRFF Mission ($0.81) and CRE ($0.79).

The value of skilled jobs supported by each program was estimated by applying a baseline rate of five full-time equivalent (FTE) research jobs per $1 million invested, consistent across UK research centre data, ARC CoE evaluations, and UNSW impact assessments[959697]. Larger and longer-term investments (CoE and Mission) were assumed to generate a modest uplift above this baseline, while CREs were held at baseline. This is supported by the review of the MRFF Cardiovascular Health Mission[98], which reported 701 research staff had been supported by MRFF funding to date[99]. The economic contribution of each FTE was valued using national benchmarks[100]. Total workforce benefits were accumulated over the duration of each program (5 years for CRE, 7 years for CoE, and 10 years for Mission) and discounted to NPV.

6.3.5 Validation, Sensitivity, Limitations

Overall, the analysis demonstrates that all proposed research funding models are expected to generate substantial net benefits to the health system, the economy and society, with returns consistently exceeding the value of investment. While CoE and Mission-based investment produce the greatest benefit per dollar invested, the CRE still generates a modest return. The results were benchmarked against published evaluations of medical research ROI in Australia. In 2018, KPMG reported a return of 2.5, ACIL Allen estimated 3.32, and Deloitte 2023 found 2.62–7.58. The CBRs generated by this model are consistent with those reported in the published literature.

Alternative data sources produce different CBRs. Using the number of FTE supported from MRFF Mission reviews reduced the CBR by approximately 9% (CoE, 4.23; CRE, 3.78; Mission, 4.23). Applying co-funding uplift estimates from MRFF Mission reviews had a minor impact on the CBR for each research investment model, changing the overall ratio by less than 1%. This analysis relies on published data, which overall explores a broad impact of scientific and medical research investment. As this analysis pertains to only AMSK and arthritis research, inputs have been inflated by 15% to account for the more targeted and concentrated nature of the proposed research. Removing this adjustment results in CBRs of 3.87 for a CoE, 3.43 for a CRE and 4.81 for a Mission-based model.

This analysis does not propose to displace or reallocate existing AMSK and arthritis research funding. Rather, it assumes incremental investment and demonstrates the additional benefits that could be achieved if funding were scaled through established models; CREs, CoEs, or Missions. The current fragmented funding environment of AMSK and arthritis is not explicitly modelled as a baseline; instead, projections illustrate the extra health and economic returns generated by extending existing activity within these frameworks.

7 An AMSK Mission

It is important to recognise that the MRFF, as a substantial endowment fund of $24.5 billion[101], has the capacity to support multiple priority-driven Missions. The establishment of an AMSK Mission does not preclude investment in other critical health areas, particularly given the significant unallocated MRFF funding available for future initiatives.

While acknowledging the validity of other disease areas' aspirations, the case for an AMSK Mission is uniquely compelling due to its profound and pervasive societal impact, disproportionate to current research investment.

7.1 Consensus Building Workshop

A consensus building workshop was conducted virtually on 14 August 2025. Participants were presented with an overview of funding model options and asked to review and rank the strategic pillars in order of importance.

All participating stakeholders (n=19), including consumers, researchers and clinicians, identified the MRFF Mission as the preferred investment model provided its objectives are clearly articulated and linked to improved outcomes and system efficiencies. Participants suggested adding service-provision elements and disease-specific streams such as osteoporosis and rheumatoid arthritis. Small groups, facilitated by Research Australia, then examined pros and cons of each option.

The group agreed to clarify the entity's purpose and expected impact before choosing a structure. Funding models were reviewed with an emphasis on sustainability. Participants argued that research funding should be linked to routine care to improve what patients receive, noting the limitations of current models and recommended a mission-style approach similar to cancer. Research Australia reported ongoing analysis of successful models in cancer and diabetes to inform the proposal. The group agreed that an MRFF Mission framework could address many challenges, provided governance and IP are handled carefully.

Participants asked for a clear statement of objectives and evidence that the Mission would create efficiencies and better outcomes across the ecosystem. A smaller, gender-focused pitch aligned to Women's Health Week was discussed, although several participants cautioning that it could dilute the core message. Sustainable funding and infrastructure were seen as critical, with participants noting that current fragmented models cannot adequately support AMSK research or clinical trials.

Feedback from earlier focus groups was also reviewed. While some stakeholders were initially sceptical, the Mission concept gained support once clarified. Participants highlighted the need to test the idea, demonstrate improved value of care through clinical trials, and tackle the system's fragmentation. They asked that the proposal spell out benefits beyond economic returns and consider positioning within a broader prevention agenda. The group noted that, once funding is secured, a virtual research entity could deliver programs without establishing a new standalone organisation.

7.2 Outcomes and Learnings from existing Missions

Reviewing the outcomes and learnings from existing Missions – while not evaluating or comparing those Missions - provides valuable insights into effective strategies and potential challenges. Reviews of the Cardiovascular Health[102], Australian Brain Cancer[103], Genomics Health Futures[104], Million Minds Mental Health[105], and Dementia, Ageing and Aged Care[106] Missions highlight significant achievements and areas for improvement in their outcomes and learnings.

It is important to note that this data reflects the status of each Mission at the time its respective review was written, and further progress may have occurred since then.

7.2.1 Significant contribution and increased funding

Across the five reviewed Missions, the MRFF has established a substantial, translation-oriented research pipeline.

- The **Cardiovascular Health Mission** is investing $220 million. It brings together researchers, health professionals, industry and patients to make transformative improvements in heart and vascular health and stroke for all Australians. At the time of the review, the MRFF had invested $441.7 million across 172 cardiovascular and stroke disease projects, leveraging an additional $145 million in co-funding. This has positioned Australia as a leader and elevated the importance of cardiovascular research.
- The **Australian Brain Cancer Mission** is investing $126.4 million to support research into brain cancer. This consists of $50 million from the Australian Government through the Medical Research Future Fund (MRFF) and $76.40 million to date in commitments from the Funding Partners. It aims to improve the quality and length of life of people with brain cancer. In the long term, the Mission aims to defeat brain cancer. At the time of the review (2023), the MRFF had allocated $60.26 million across 19 projects.
- The **Genomics Health Futures Mission** is investing $500.1 million in genomic research. It will improve testing and diagnosis for many diseases; help personalise treatment options to better target and improve health outcomes. It will also reduce unnecessary interventions and health costs. As of December 2021, the GHFM had invested $273.2 in 88 genomics research projects, and the MRFF had also invested $264.08 million in 82 genomics-related projects through 12 of the remaining MRFF initiatives.
- The **Million Minds Mental Health Research Mission** is investing $125 million to support a million Australians with mental health issues. This funding will enable access to new approaches to prevention, diagnosis, treatment and recovery. As of February 2022, approximately half ($64,809,460) of this funding had been allocated to 18 research projects, with individual grants ranging from approximately $218,000 to almost $12 million.

- The **Dementia, Ageing and Aged Care Mission** is investing $185 million. It supports older Australians to maintain their health and quality of life as they age, live independently for longer, and access quality care when they need it. The MRFF is positioned as Australia's second-largest funder of DAAC research, accounting for 33% of national funding between 2018 and 2024, with $92 million in Mission funding and $203 million in non-Mission funding across 126 grants.

7.2.2 Alignment with priorities and addressing unmet need

Projects generally align with Mission priorities, though distribution and effectiveness vary. Investigators widely report that MRFF funding has targeted evidence gaps, expanded national infrastructure, and have built capacity in priority populations.

- **Cardiovascular Health:** Projects aligned closely with priorities, with 58% of funding directed towards discovering and testing new solutions. Most Chief Investigators (86%) believed the Mission identified and addressed evidence gaps.
- **Brain Cancer:** MRFF-funded grants aligned well with the Mission Roadmap, particularly in increasing access to clinical trials. Survivorship research, an area of patient need, received significant focus (44% of Mission funding).
- **Genomics Health Futures:** Aims and priority areas are broad and comprehensive, with significant strides made in increasing genomic diagnoses, prevention, and early interventions. Projects have focused on areas of unmet need, particularly in rare diseases.
- **Million Minds Mental Health:** All 18 funded projects included in the review addressed one or more of the five Investment Priorities, making concrete contributions to the mental health research field, including addressing unmet needs in Aboriginal and Torres Strait Islander youth mental health and eating disorders.
- **Dementia, Ageing and Aged Care:** Research investments are well aligned with Mission aims and priorities. The most frequently addressed benchmark was increased focus on unmet needs (79% of projects).

7.2.3 Progress Towards Translation and Impact

While many projects are still underway, there are emerging signs of progress towards translational outcomes and broader impact. Generally, the MRFF Missions have increased clinical trial access and capacity, embedded consumer involvement, and strengthened workforce and networks. Common barriers include fragmented implementation pathways, limited dedicated translation support, variable industry engagement, and health-system readiness (workforce, data, regulatory, procurement).

- **Cardiovascular Health:** A quarter to a third of projects reported achieving milestones, with 23% making substantial progress towards funding objectives. Translation activities included engaging with clinicians (72%) and partners (60%).

- **Brain Cancer:** Increased funding has allowed researchers to seek international trials more efficiently, with MRFF grants giving approximately 1,350 additional patients access to clinical trials. Capacity for translational research has been built, particularly in attracting researchers and funding shared infrastructure.
- **Genomics Health Futures:** Projects have made more progress in early-stage research activities such as increasing focus on unmet needs and enhancing translational research capacity. Less advancement has been observed in later-stage outcomes such as embedding new health technologies into clinical practice.
- **Million Minds Mental Health:** 92% of Mission survey respondents expected to translate their findings into practice within two years, with reported outputs including academic publications, media engagement, and new clinical guidelines. Two multi-institutional, nationwide mental health Clinical Trials Networks were created.
- **Dementia, Ageing and Aged Care:** The portfolio is broadly on track, with 62% of Mission-funded projects in the late-stage of their funding period, indicating expected outputs in coming years. Consumer involvement was reported in 93% of projects, and approximately 75% engaged one or more priority populations.

7.2.4 Research Workforce and Collaboration

The Missions have supported workforce development and fostered collaboration, though opportunities for further enhancement exist.

- **Cardiovascular Health:** Supported 701 research staff, with most Chief Investigators believing the MRFF built research capability (84%) and supported talent attraction/retention (74%). Half of all funded projects created new national/international networks.
- **Brain Cancer:** Increased funding has led to a higher number of brain cancer researchers. The co-funding model has promoted synergistic investment.
- **Genomics Health Futures:** Fostered better collaboration within the genomics research community, but there is a need for more partnerships with the broader healthcare sector, government agencies, and international collaborators.
- **Million Minds Mental Health:** 97% of Mission survey respondents reported contributing to building professional capabilities of research teams. Many projects established interdisciplinary collaborations.
- **Dementia, Ageing and Aged Care:** Strong consumer involvement, including in advisory and design roles, is a distinct strength. Stronger involvement of clinicians could help bridge the gap between research, policy, and practice.

7.2.5 Opportunities for Improvement and Future Learnings

Reviews identified areas for refinement to maximise impact. Broad roadmaps were found to support an inclusive range of research topics, but may result in a diluted focus. Stakeholders reported tension between comprehensive scopes and the need for sharper, time-bounded objectives that enable visible system-level change. Several reviews highlight the need to rebalance basic/biology and discovery research with MRFF's translational emphasis to sustain a feed of trial-ready candidates.

Examples of the opportunities for improvement and recommendations include:

- **Cardiovascular Health:** Refine and communicate funding objectives, quarantine funding for larger "grand challenge" projects, strengthen focus on First Nations research, enhance requirements for translation plans and co-funding, and improve Mission leadership and communication.
- **Brain Cancer:** Define the Mission's role and purpose more clearly, develop a comprehensive Implementation Plan for the next phase, improve communication and coordination with stakeholders, increase funding for biology and basic research, explore innovative funding models (e.g., for early/mid-career researchers, high-risk research), encourage greater industry involvement, and develop a consumer engagement framework.
- **Genomics Health Futures:** Refine investment strategy and priorities, strengthen coordination and communication, support collaboration across the sector, and consider innovative funding models. Address systemic obstacles like workforce gaps, health system preparedness, infrastructure, and data management.
- **Million Minds Mental Health:** Build on core value propositions, consider increased investment in high-burden topics and integrated approaches, ensure strong representation of consumer/carer perspectives in priority setting, introduce alternative funding arrangements (e.g., balancing basic/clinical/applied research, boosting existing projects), reform implementation processes (e.g., longer lead times, better feedback), enhance dissemination of information, and work collaboratively on broader/long-term capacity building (e.g., national ethics approval, commercialisation support).
- **Dementia, Ageing and Aged Care:** Recognise the "real world" overlap across dementia, ageing, and aged care, refocus priorities to support aged care reform, strengthen research effort in underrepresented priority populations, embed translation expectations in funding, foster collaboration over competition, introduce targeted funding streams, strengthen coordination of national DAAC research funding, strengthen research end-user involvement, and enhance communication about research.

7.2.6 Summary

In summary, the MRFF Missions have successfully injected significant funding into critical health research areas, fostering collaboration and building research capacity. While early progress towards translational outcomes is evident, challenges remain in fully embedding research findings into practice, ensuring equitable access, and optimising strategic coordination and communication across the complex research landscape. Future efforts will focus on refining investment strategies, enhancing stakeholder engagement, and addressing systemic barriers to maximise the transformative potential of these Missions.

7.3 Pathway to Mission establishment

While the MRFF is established in legislation, individual Missions typically arise from a convergence of forces. A health area reaches a point where its burden on people, services and the economy warrant a coordinated response; sustained advocacy from patients, clinicians, researchers and professional bodies builds momentum; and government inquiries, commissions or reviews marshal evidence, consult affected communities, identify gaps (including in research funding) and deliver recommendations that create the policy and political impetus for significant investment.

- Announced amid the Aged Care Royal Commission[107], the **Dementia, Ageing and Aged Care Mission** reflected the inquiry's evidence of systemic failure and unmet need in aged care. Its aims (improving dementia detection, prevention and care; strengthening healthy ageing; and lifting care quality) track closely to the Commission's reform agenda and the call for research-enabled innovation to support older Australians.
- Launched in 2018 against a backdrop of sustained mental health reform, the **Million Minds Mental Health Research Mission** builds on a decade of national and state inquiries, continuous reporting from the National Mental Health Commission[108], and, soon after, the Productivity Commission's inquiry[109]. That policy environment underscored gaps in access, evidence and translation, shaping a program oriented to participatory, intervention-focused research and research capacity.
- Announced in 2017, the **Australian Brain Cancer Mission** arose from growing recognition, driven by clinicians, consumer advocates and cancer agencies, including Cancer Australia, of persistently poor survival and historical underinvestment relative to burden. Its emphasis on trials, survivorship and research platforms are designed to mobilise national effort around a clearly defined unmet need.

7.3.1 Current Mission proposals

Beyond the established MRFF Missions, several other significant disease areas are actively advocating for dedicated research investment, often proposing new Missions or substantial funding injections from the MRFF. Understanding these proposals from groups such as Diabetes Australia, the Neurological Alliance Australia, and Kidney Health Australia provides context for the competitive yet collaborative environment in which an AMSK Mission would be established.

7.3.1.1 Diabetes

The Australian Diabetes Society (ADS) is the peak national health/medical professional body in diabetes, representing endocrinologists, research scientists and clinicians and other health and allied professionals with a significant and specific interest in diabetes. ADS has recommended the establishment of **a $125 million Diabetes Mission through its 2025-26 pre-budget submission**, building on an earlier recommendation of $270 million Diabetes and Obesity Mission via submission to the House of Representatives Standing Committee on Health, Aged Care and Sport's Inquiry into the Prevention, Diagnosis and Management of Diabetes in Australia[110].

7.3.1.2 Neurological and neuromuscular conditions and disorders

The Neurological Alliance Australia is an alliance of 35 not-for-profit peak organisations representing adults and children living with progressive neurological or neuromuscular diseases or neurological disorders in Australia. The Alliance was established to promote improved quality of life for people living with these conditions and increased funding to support research.

Noting that almost 1 in 4 Australians are impacted by Neurological Conditions, the Neurological Alliance believes that neurological conditions are an area of national priority, show strong alignment with the MRFF strategy and priorities, and show strong opportunities for return on investment. **They recommended a new Neurological Mission of $300 million in their 2025-26 pre-budget submission111.**

7.3.1.3 Kidney Health

Kidney Health Australia is Australia's voice for kidney disease, fighting for increased awareness, early detection and better treatment of this incurable disease. Kidney Health Australia has a goal to be a key facilitator of research into kidney disease, and aims to create a Kidney Research Alliance, drive research priorities aligned to patient needs, and create a Kidney Research Mission[112].

7.3.2 Insights and learnings from the National Centre of Excellence in Intellectual Disability Health

To address persistent inequities in health care for people with intellectual disability, the Australian Government invested $12.7 million in the 2021–22 Budget to progress priority actions in the *National Roadmap for Improving the Health of People with Intellectual Disability*[113]:

1. Promote the uptake of annual health assessments for people with disability, using best practice assessment tools,
2. Improve tertiary education curricula for health professionals so they are better equipped with the knowledge and skills they need to provide high quality care to people with intellectual disability, and
3. Scope a model for a new National Centre of Excellence in Intellectual Disability Health that provides national leadership on the health care of people with intellectual disability and can be a central hub of expertise and resources for all health and disability service providers across the country.

Following an open competitive grant process in 2023, the Australian government allocated $23.9 million to a group of 9 organisations, led by the University of New South Wales, to establish the National Centre of Excellence in Intellectual Disability Health (NCEIDH).

A semi structured interview was conducted with a founding member of the NCEIDH consortium to explore key strengths of the approach which resulted in the successful acquisition of the grant.

The NCEIDH was built on a "coalition first, grant second" approach. A cross-sector consortium of academics, advocacy organisations and health service leaders met several times a month for roughly 18 months before submitting the grant application. The group agreed that no activity would proceed without at least two delivery partners, which ensured collaboration and avoided siloed funding.

Governance was designed to centre lived experience from the outset. The Council (board) included people with intellectual disability; a resourced Lived Experience panel supported participation using accessible materials and paid roles; a management committee comprising consortium members oversaw operations; and a First Nations advisory group ensured perspectives were embedded across all workstreams. A dedicated governance specialist drafted structures, contracts, payment flows and decision rights. This backbone function was critical to move quickly once funding became available.

Government engagement followed a "no surprises" principle. Agencies were kept informed, engaged and briefed, but they did not hold decision rights during formation. This preserved the Centre's ability to advocate independently while maintaining constructive relationships with officials.

The consortium invested early in agreeing shared values and openly managing power dynamics. Members acknowledged that collaboration involves discomfort and used values as an anchor during conflict. This helped reconcile tensions between research norms, organisational priorities and lived experience perspectives. Contracting was streamlined as a single lead institution (UNSW) held the grant and subcontracted to consortium members.

Programmatically, the Centre organised work under four streams: improving health services, resources and education, advocacy, and research. This structure created clear lines of accountability and a coherent external narrative.

Several challenges were described. Policymakers often struggled to interpret and compare heterogeneous evidence; not everything aligns to randomised controlled trials, and research findings can appear similar yet be methodologically different. There was also a tension between presenting a single sector voice and preserving choice and control for consumers. The consortium concluded that unity should focus on shared goals and outcomes, not uniform tactics. Finally, the formation process was time- and resource-intensive, and funding advocacy did not end with initial success.

These lessons are directly applicable to further developing a proposal for an AMSK Mission. The sector would benefit from establishing a standing coalition focused on a 12-month pathway, which should extend beyond existing advisory groups and include lived experience leaders (resourced and supported for participation), First Nations representation embedded across all activities, health services and primary care, rehabilitation and allied health, digital health, workforce leads, researchers and consumer organisations. Government should be kept close through regular briefings but remain outside decision-making structures until the bid is fully formed.

Power dynamics and discomfort are inherent in cross-sector collaboration. This can be constructive when values and decision rights are explicit, and facilitation is in place. Tokenism is a persistent risk; it is mitigated by paying lived experience contributors, providing accessible materials and sharing decision rights rather than relying on consultation alone. Early government involvement can unintentionally shape priorities; this is addressed by maintaining engagement without ceding decisions until governance is settled. Over-centralising a "single voice" can suppress diversity; unity should be framed around goals, such as choice, access and evidence-based care, while allowing multiple pathways to achieve them.

The NCEIDH experience shows that disciplined coalition-building, deliberate governance, resourced participation and a clear program structure create the conditions for a compelling, fundable proposal.

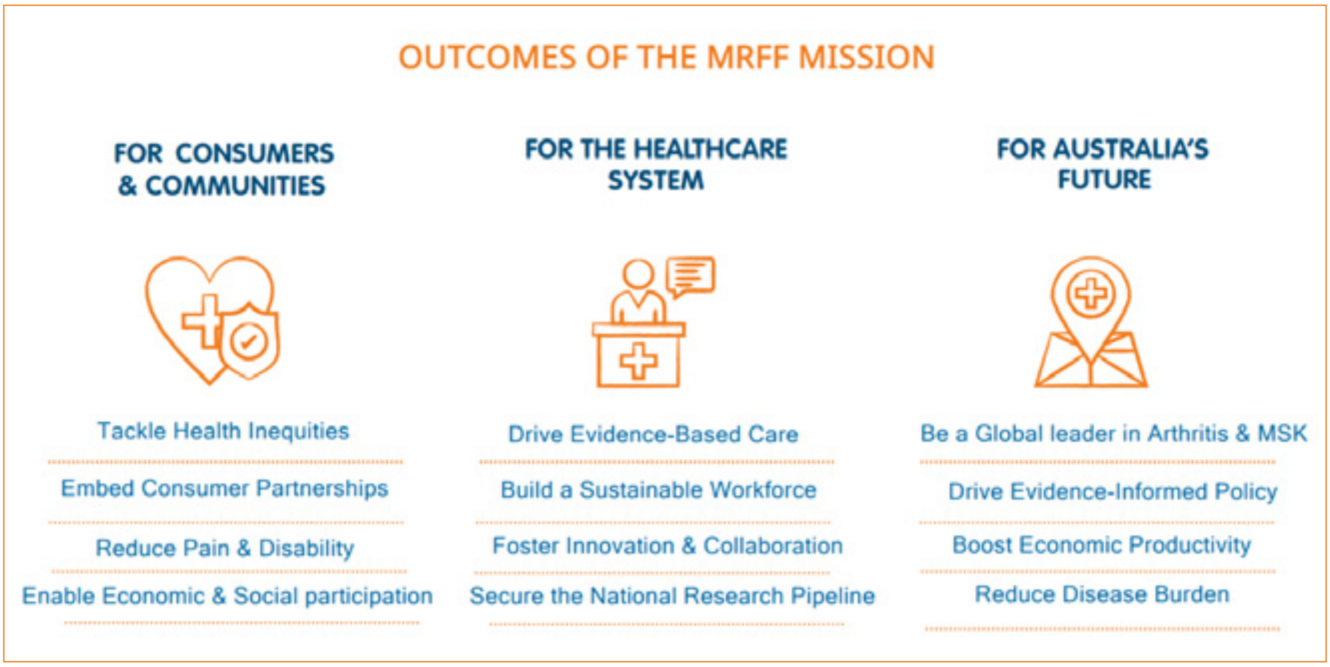
7.4 Potential Objectives of an AMSK Mission

To truly transform AMSK health outcomes in Australia, a coordinated and strategic national research initiative is essential. Building upon the success of established frameworks and learning from other disease areas, we propose a targeted investment approach that aligns with the objectives of the MRFF Mission and addresses critical gaps in current research.

Vision: An Australia where AMSK conditions no longer limit participation, productivity, or quality of life.

Table 8: Potential Objectives of an AMSK Mission

Objective	Priorities	Research programs / activities
Objective 1: Enhancing foundational research infrastructure	National data platform Cross cutting research Early diagnosis	Development and implementation of a national, interoperable AMSK data platform to unify health data and track outcomes. Research into best practices for data linkage, privacy, and governance to maximise the utility of AMSK data. Utilising real-world data from the platform to understand the full burden of AMSK conditions and evaluate the effectiveness of current interventions. Research into common pathways and shared mechanisms across different AMSK conditions to identify opportunities for collaborative funding and treatment strategies. Development and implementation of platform trials
Objective 2: Supporting a skilled workforce for AMSK research and care.	Prevention and workforce productivity Consumer partnerships	Mentorship programs for early career researchers to build a sustainable pipeline of AMSK experts. Initiatives to embed consumer advocates in research design and governance. Research into models for translating evidence into practice for health professionals. Development of specialised training programs for healthcare professionals in early diagnosis, intervention, and management of AMSK conditions.
Objective 3: Fostering innovation for transformative AMSK health solutions.	Access to equitable healthcare National data Platform Translation Support clinical trial capacity	Discovery research into novel biomarkers, genetic factors, and environmental triggers for various AMSK conditions. Development and validation of new diagnostic tools and technologies for earlier and more accurate AMSK diagnosis High-risk, high-reward trials of emerging therapeutic interventions and technologies (e.g., cell therapies, advanced biomechanics). Development of AI/machine learning models to predict disease progression or treatment response in AMSK conditions.
Objective 4: Establishing excellence and addressing priority needs in AMSK health.	Precision medicine Access to equitable health care Supporting recovery and return to work Models of care	Targeted research programs focusing on the unique challenges and prevalence of AMSK conditions in First Nations communities. Research into culturally appropriate and accessible AMSK care models for rural, remote, and other underserved populations. Development and evaluation of integrated care pathways for complex AMSK conditions, coordinating across specialties and allied health. Research into effective models for supporting individuals with chronic AMSK conditions to maintain employment and participate in society.



OUTCOMES OF THE MRFF MISSION

FOR CONSUMERS & COMMUNITIES	FOR THE HEALTHCARE SYSTEM	FOR AUSTRALIA'S FUTURE
Tackle Health Inequities	Drive Evidence-Based Care	Be a Global leader in Arthritis & MSK
Embed Consumer Partnerships	Build a Sustainable Workforce	Drive Evidence-Informed Policy
Reduce Pain & Disability	Foster Innovation & Collaboration	Boost Economic Productivity
Enable Economic & Social participation	Secure the National Research Pipeline	Reduce Disease Burden

8 A Core Priority: Gender Responsive Care

8.1 Background

The health of women, girls, and gender diverse people in Australia is shaped by a complex interplay of biological, social, and economic factors. Despite advances in women's health research, significant challenges remain. Systemic biases, narrow definitions of women's health, underrepresentation in research design and leadership, and fragmented systems have limited the evidence base needed to deliver equitable health outcomes.

In 2024, Ackerman et al. projected, for the first time, the prevalence of arthritis by gender: across all projection years, the number of females with arthritis, osteoarthritis (OA), rheumatoid arthritis (RA), or juvenile idiopathic arthritis (JIA) far exceeds the number of males with these conditions[,114]. This was most notable for OA, where the prevalence among women was almost 80% higher than for men. The disproportionate impacts of arthritis borne by women, which may be compounded by pre-existing socioeconomic disparities including gender pay and superannuation gaps, deserve attention[115].

Potential research streams are described below; potential research aims, programs of work, and investment opportunities can be found in Annex I.

8.1.1 Potential research streams

Women's pain is routinely under-recognised in Australia[116], with women's arthritis pain often normalised or redirected to non-inflammatory causes, delaying diagnosis and treatment. In addition to frustration, poor pain management, and eroded trust with the health system, delayed diagnosis can result in time out of paid work, strain on caregiving roles, and avoidable disruption to sex and relationships. For example, women wait an average of 2 years longer than men for a diagnosis of axial spondylarthritis (axial SpA)[117]. **This points to the need for a sex- and life-stage–sensitive approach, where GPs are provided with increased decision support when presented with inflammatory pain and atypical presentations in women, and bias-aware pain assessment training.**

There is significant underuse of frontline, non-surgical treatments for AMSK conditions, leading to unnecessary surgeries and potentially harmful interventions. Clinical guidelines underscore that exercise, education, and allied health support are the most effective early management strategies for conditions like osteoarthritis, yet fewer than half of Australian patients receive care in line with these recommendations[118]. Due to the ongoing impacts of colonialism, including poverty, racism, barriers to accessing care, and poor experiences with health care, First Nations Australians are at a higher risk of disabling AMSK pain, experiencing 1.4 times the burden of AMSK conditions than the non-Indigenous Australians[119]. Despite the higher prevalence of

AMSK conditions, a systematic review found that First Nations Australians accessed primary care for knee or hip OA at approximately half the rate of non-Aboriginal people[120]. Despite proven benefits, Australia's health funding and delivery systems still incentivise late-stage surgical interventions rather than supporting accessible frontline care, highlighting an urgent need for reforms to close this gap and improve quality of life for women with AMSK conditions.

Some members of our community are disproportionately impacted by AMSK. Women in Australia experience a higher prevalence and burden of a several AMSK conditions – osteoarthritis (OA), for example, is estimated to effect 10.4% of Australian females compared to 6.1% males – yet policies, datasets, and models of care are largely gender neutral[121]. In addition, First Nations people are at a higher risk of disabling AMSK pain, experiencing 1.4 times the burden of AMSK conditions than the non-Indigenous Australians, yet access to primary care is disproportionately lower[122]. This is likely due to the ongoing impacts of colonialism, including poverty, racism, barriers to accessing care, and poor experiences with health care.

In addition to women having a higher incidence, prevalence, and rate of worsening of **osteoarthritis** than their male counterparts[123], women experience worse symptoms, functional limitations, and therapeutic outcomes at comparable levels of structural damage[124]. Women have greater limitations of physical function and performance than men independent of BMI, OA severity, injury history, and amount of weekly exercise. Women also have greater use of analgesic medications than men but less use of arthroplasty and poorer prognosis after surgical interventions[125]. **Default referral to evidence-based exercise groups and embedding social-prescribing link workers (where possible) to connect people to low/no-cost local supports would help shift care from analgesics towards active management, reduce avoidable progression, and ease out-of-pocket costs.**

The total out-of-pocket expenditure on **OA treatment** for Australian women aged 50 years and over is estimated to be $873 million per annum[126]. **Use funding levers to lessen the cost burden, increase subsidised allied-health visits under chronic disease management plans, and explore PBS co-payment relief for high-value treatments.**

Traumatic knee injury has been identified as a key predisposing factor for knee osteoarthritis. Women are 3.4 times as likely to experience ACL injuries compared to males, and the number of posterior cruciate ligament (PCL) injuries and knee dislocations is rising among females, but not males[127]. **This suggests that greater consideration need to be given to knee injury prevention as part of national sports participation initiatives.**

Rheumatoid arthritis, which contributes accounts for 15.7% of the AMSK disease burden[128], disproportionately affects women in their working and reproductive years, and active disease (and some medicines) can complicate conception and pregnancy. With pre-conception planning and pregnancy-compatible regimens (e.g., selected TNF inhibitors), most women can have healthy pregnancies, but uncontrolled RA is linked to higher risks of preterm birth, small-for-gestational-age infants, and postpartum flareups[129].

Despite guideline-endorsed pregnancy compatible treatment options, Australian women with rheumatic disease report unmet needs related to information provision and access to support services during the perinatal period, with 50% reporting they received no medical advice before pregnancy[130], **underscoring the need for integrated perinatal and reproductive health pathways[131].**

A random sample of 780 Australian women found that nearly half (44%) experienced **pregnancy-related girdle pain** (PPGM), a common AMSK disorder causing moderate to severe pain, difficulty with physical activities, and psychological distress[132]. Whilst healthcare professionals report commitment to caring for women during pregnancy, busy workloads, attitudes towards curability, and a lack of formal education have been identified as barriers to PPGM care, **suggesting that timely access, clear referral pathways, integrated approaches, and greater emphasis on the need for multidisciplinary models of care are required for best practice[133].**

The high prevalence of health, lifestyle, and psychological risk factors for pain result in significant disparities in pain management outcomes[134]. **To address these gaps, health services should focus on improving First Nations patients' experiences of care and improving patient-practitioner communication.**

Theoretical gaps: Investigating how these factors interplay could yield a more nuanced understanding of these conditions in Australian women. There appears to be a lack of research examining the intersectionality of gender, socio-economic status, and other factors such as race, ethnicity, and age in relation to AMSK health conditions. Few studies have explored the impact of arthritis and AMSK conditions on women's mental health, quality of life, and social relationships. There is a need for further large-scale prospective studies with a consistent definition of RA phenotype. This will ultimately afford the opportunity to evaluate preventative population strategies for RA akin to the well-established programmes for cardiovascular disease and cancer, targeting common risk factors[135].

Women in Australia experience a higher prevalence and burden of a several AMSK conditions, yet policies, datasets, and models of care are largely gender neutral. Diagnostic delays, limited perinatal rheumatology pathways, underuse of first line conservative care, and access barriers for First Nations and rural women signal structural gaps. Without urgent and targeted action, the number of Australians affected will continue to grow, along with the personal, social, and economic costs. Targeted funding for women's AMSK care would close evidence-based gaps (diagnosis, perinatal pathways, first-line care access), improve participation (particularly for perinatal and mid-life cohorts), and reduce avoidable downstream costs (ED presentations, specialist bottlenecks, joint replacements).

9 Launch

On 1 September 2025, Arthritis Australia marked its 75th anniversary with an event at Parliament House in Canberra, bringing together people living with arthritis, carers, researchers, clinicians, and policymakers. The event recognised the contributions made over seven decades while highlighting the urgent need for greater investment in AMSK health. At the event, Arthritis Australia launched a communiqué (appendix K) calling for the establishment of a 10-year Medical Research Future Fund (MRFF) Mission to invest $100 million to coordinate research, generate new evidence, and accelerate translation into care that improves outcomes, supports recovery, and strengthens workforce participation.

10 Future directions

Australia needs a unified national vision to transform its response to arthritis and other AMSK conditions through a forward-looking research and innovation agenda. AMSK conditions are the leading cause of pain, disability and work loss, impacting individuals, families, communities, the health system and the economy. As with every life-changing breakthrough, progress starts with discovery science - data-driven, pre-clinical and translational research that seeds the therapies, models of care and technologies that change lives. Yet AMSK research capacity is fragile: funding is fragmented, trials are slow to start, and the next-generation workforce sits at a tipping point. Without decisive action, Australia risks ceding leadership in AMSK health innovation.

The following steps extend beyond the scope of this project but represent important actions to strengthen the evidence base, sustain advocacy, and advance the case for a national research initiative.

1. **Cost–benefit analysis:** Explore the counterfactual scenario (status quo) using an established ROI framework such as the Queensland CBA approach to identify the costs of inaction. *This was considered during the project but not undertaken due to timeframes and limited data availability.*
2. **Ongoing advocacy with Department of Health:** Continue engagement with the Department to highlight the burden of AMSK conditions and ensure under-utilised or unallocated annual funding is directed to priority areas.
3. **Implementation and advocacy strategy:** Develop a coordinated strategy to elevate findings, including building an alliance to disseminate outcomes, preparing pre-budget submissions, and working towards stronger positioning of AMSK within government priorities.

Appendices

Appendix A. Glossary

Australian Research Council (ARC)	Commonwealth entity and advises the Australian Government on research matters, administers the National Competitive Grants Program (NCGP), a significant component of Australia's investment in research and development, and has responsibility for Excellence in Research for Australia (ERA).
Allied health	Broad range of health professionals that are not part of the medical, dental, or nursing professions, often working within a multidisciplinary health tam to provide specialised support for different patient needs[136]. Regulated allied health professions include Chinese medicine practitioners, chiropractors, medical radiation practitioners, occupational therapists, optometrists, osteopaths, pharmacists, physiotherapists, podiatrists and psychologists.
Arthritis	Inflammation of the joints that can cause pain and stiffness. Arthritis is a broad term that includes many specific conditions, like rheumatoid arthritis, osteoarthritis and juvenile idiopathic arthritis.
Applied research	Original investigation undertaken to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective[137].
Consumer engagement in research	Consumers, community members, researchers and research organisations working in partnerships to improve the health and wellbeing of all Australians through health and medical research[138].
Cross cutting research	In the context of this report, cross cutting research refers to research activity whose outputs are potentially applicable across multiple types of AMSK conditions.
Medical Research Future Fund (MRFF)	Ongoing research fund set up by the Australian Government in 2015. The MRFF aims to transform health and medical research and innovation to improve lives, build the economy and contribute to health system sustainability. In July 2020 it grew to $20 billion. The net interest from the fund pays for important health and medical research projects
Musculoskeletal disease	Conditions or diseases that impact the musculoskeletal system, including the bones, joints and muscles. These can be narrowed down into specific conditions, such as arthritis.
National Health and Medical Research Council (NHMRC)	An independent statutory agency within the portfolio of the Australian Government Minister for Health and Ageing. The NHMRC creates pathways to a healthier future through research funding, health guidelines and ethical standards.
National Strategic Action Plan for Arthritis	Led by Arthritis Australia in 2019 with funding from the Commonwealth Department of Health, the Plan outlines key priorities for preventing arthritis, investing in research and improving treatment support for people living with arthritis.

National Strategic Action Plan for Osteoporosis	Led by Osteoporosis Australia in 2019 with funding from the Commonwealth Department of Health, the Plan outlines key priorities regarding awareness and education, improving diagnosis, management and care, and data collection, monitoring, and strategic research.
Pure basic research	Research carried out for the advancement of knowledge, without seeking long-term economic or social benefits or making any effort to apply the results to practical problems or to transfer the results to sectors responsible for their application[139].
Strategic basic research	Experimental and theoretical work undertaken to acquire new knowledge directed into specified broad areas in the expectation of practical discoveries. It provides the broad base of knowledge necessary for the solution of recognised practical problems[140].

Appendix B. Types of AMSK conditions

Ankylosing spondylitis (AS)	Ankylosing spondylitis (AS) is a condition that mainly affects the spine. The joints of the neck, back and pelvis become inflamed, causing pain and stiffness. Other joints, such as the hips and shoulders, and other areas of the body such as the eyes, skin, bowel and lungs, can also be involved. Symptoms of AS usually begin between the ages of 15 and 45 years.
Anterior knee pain (children)	Anterior knee pain is pain which occurs in the front of the knee is more common during the teenage years and affects girls more than boys.
Chilblains	Chilblains are an injury to the skin of the hands and feet (although they can occur elsewhere like nose, ears, buttocks) caused by cold temperatures. The other name for chilblains is perniosis.
Chronic recurrent multifocal osteomyelitis	Chronic recurrent multifocal osteomyelitis (CRMO) is a disease affecting the bones. Inflammation is normally one of the body's protective responses to infection or injury, but in diseases such as CRMO, uncontrolled inflammation can cause damage. In CRMO, inflammation targets the bone and can occur throughout the body.
Diffuse Idiopathic Skeletal Hyperostsis (DISH)	DISH is a form of arthritis that involves the tendons and ligaments around the spine. Also known as Forestiers Disease, this condition occurs when the tendons and ligaments become hardened, a process known as calcification. Once the tendons and ligaments harden, parts of this tissue can turn into bone.
Familial Mediterranean fever	Familial Mediterranean fever (FMF) is a disease that results in episodes of fever, abdominal pain, chest pain, joint pain and rashes. It is most common in people of Mediterranean and Middle Eastern ancestry, but can occur in people of any ethnicity.
Fibromyalgia	Fibromyalgia is a name given to a common group of symptoms marked by generalised pain and muscle stiffness, as well as extreme fatigue. These may range from very mild to severe and may last for many years or come and go at different times. With the right advice, most people find they learn to manage the pain and tiredness over time.

Giant Cell Arteritis	Giant Cell Arteritis is an autoimmune disease, where the body attacks its own blood vessels. It is also known as temporal arteritis as it can cause pain, inflammation and tenderness around the temples. Around 1,000 Australians are diagnosed with GCA each year.
Gout	Gout is a common and painful condition that affects the joints. Small crystals form in and around the joint, causing inflammation, pain and swelling. An attack of gout usually comes on very quickly, often overnight. The joint becomes very red, swollen and extremely painful. Gout normally affects one joint at a time, often the joint of the big toe.
Growing pains	Growing pains are common and affect otherwise healthy children. The pains usually start in the preschool years. Growing pains are often difficult to pinpoint but are usually in the legs.
Haemochromatosis and haemochromatotic arthritis	Haemochromatosis is a condition caused by a build-up of iron in your body. People with haemochromatosis absorb too much iron from food (iron overload) and the extra iron can damage organs, particularly the liver, heart, pancreas, bones and joints.
Hypermobility syndromes (children)	We are at our most flexible as babies and become less flexible with age. Many children are hypermobile ("double jointed") in one or more joints. When this affects many joints, and is associated with pain, it is called a hypermobility syndrome.
Joint hypermobility	Joint hypermobility ("double jointed") is the term used when someone's joints bend further than most people's joints. It may exist by itself or be part of a more complex diagnosis such as "Hypermobility Spectrum Disorder" or "Ehlers-Danlos Syndrome".
Juvenile dermatomyositis	Juvenile dermatomyositis (JDM) is a rare condition that causes inflammation of the skin and muscle. Inflammation is one of the body's protective responses to infection or injury, but in diseases such as JDM, uncontrolled inflammation can cause damage. Other parts of the body may also be affected such as the lung and intestines.
Juvenile idiopathic arthritis (children)	Juvenile idiopathic arthritis (JIA) is the name given to a number of types of arthritis that occur in children. We do know that JIA is an autoimmune condition. This means the body's immune system (its protective mechanism against infection) starts to mistakenly attack healthy cells of the body.
Localised scleroderma	Localised scleroderma is an inflammatory disease affecting the skin. Inflammation is normally one of the body's protective responses to infection or injury. In diseases such as localised scleroderma, uncontrolled inflammation leads to hardening and discolouration of the involved skin.
Osteoarthritis	Osteoarthritis is the most common form of joint disease. It affects the whole joint including bone, cartilage, ligaments and muscles. Although often described as 'wear and tear', this is not an accurate description of osteoarthritis. Osteoarthritis is now thought to be the result of a joint working extra hard to repair itself.
Polymyalgia rheumatica	Polymyalgia rheumatica means 'pain in many muscles'. It is a condition that causes inflammation of the joints and tissues around the joints. This causes muscles to feel painful and stiff, especially in the shoulder, neck and hip areas. Polymyalgia rheumatica is different to fibromyalgia, a condition that does not cause inflammation.

Psoriatic arthritis	Psoriatic arthritis is a condition that causes inflammation of the joints. This causes the joints to become painful, stiff and often swollen. Usually, only people who have a skin disease called psoriasis are affected by psoriatic arthritis
Reactive arthritis	Reactive arthritis is a condition that causes inflammation, pain and swelling of the joints. It usually develops after an infection, often in the bowel or genital areas. The infection causes activity in the immune system.
Rheumatoid arthritis	Rheumatoid arthritis, a common inflammatory form of arthritis, is an autoimmune disease that causes pain and swelling of the joints. In an autoimmune disease, your immune system starts attacking your own healthy tissues. In RA, the immune system targets the lining of the joints, causing inflammation and joint damage.
Ross River virus	Ross River virus and Barmah Forest virus are infections that are spread to humans through mosquito bites. They cause similar illnesses, including joint inflammation and pain. People of all ages are at risk of developing these infections. Ross River virus is the most common and widespread of mosquito borne diseases that infect humans in Australia.
Scleroderma	The word ‘scleroderma’ means ‘hard skin’. Scleroderma affects the connective tissues of the body (tissues that hold together joints, muscles, blood vessels and internal organs). Symptoms vary greatly from person to person and also depend on what part of the body is involved.
Sever’s disease	Sever’s disease causes pain in the bone at the back of the heel. This pain occurs because of a mismatch between the growth of the calf bones and muscles. It is slightly more common in boys than girls and usually affects children aged 8 – 12 years.
Sjögren’s disease	Sjögren’s disease is an autoimmune condition. The normal role of your body’s immune system is to fight off infections and diseases to keep you healthy. In an autoimmune disease like Sjögren’s disease your immune system starts attacking your own healthy tissues.
Systemic lupus erythematosus	Systemic lupus erythematosus (also called SLE or lupus) is an autoimmune condition. The normal role of your body’s immune system is to fight off infections and diseases to keep you healthy. In an autoimmune disease like lupus, your immune system starts attacking your own healthy tissues.

Appendix C. Changes to the MBS Chronic Disease Management Framework

Table 9: Impact of changes to the MBC Chronic Disease Management Arrangements on consumers with AMSK conditions

Changes from 1 July 2025	Implication for AMSK conditions
GPCCMP replaces GP management plans (GCMP) and team care arrangements (TCAs)	This administrative change will simplify care pathways for people with AMSK conditions, as they will have a single plan that sets out their treatment and allied health needs. • This may reduce administrative delays and make it easier for GPs to imitative care planning. • The key will be whether the new GPCCMP effectively consolidates the benefits of both previous plans without losing any functionality.
MyMedicare registration linkage: patients registered through MyMedicare will be required to access the GPCCMP and review items through the practice where they are registered; other patients will be able to access items through their usual GP.	People who are registered with MyMedicare will need to access their care plan and reviews through the practice they are registered with. • For those registered with MyMedicare, this could foster a stronger relationship with their primary care practice, potentially leading to more consistent and coordinated care over time, which may be beneficial for managing long-term AMSK conditions. • Consumers not registered with MyMedicare might experience less seamless access or continuity if they frequently see different GPs. • This may create an administrative hurdle for some consumers.
Access: Previously, consumers often needed to show they required multidisciplinary input to be eligible for CDM plans. Now, patients will be eligible for the plan if their condition in managed by their GP or prescribed medical practitioner, regardless of the need for multidisciplinary care.	This broadens initial access and is beneficial for AMSK consumers with "single stream" needs (e.g. ongoing physiotherapy) who may have struggled to access a plan under the old system. • Consumers with less complex AMSK conditions might get a plan more easily, even if they don't immediately need multiple allied health services. • While access is broadened, the quality of the plan still relies on the GP's assessment and understanding of the condition.
Multidisciplinary care: patients will be able to access the same range of services currently available through GPMP and TCA.	Consumers will still be able to access the same allied health services (e.g. physiotherapy, podiatry, exercise physiology). This maintains continuity, but the unchanged cap of **5 subsidised allied health visits per year** remains a limitation for people with AMSK conditions who often need more intensive support.

Simplified referrals: patients can be referred directly; the requirement to consult with at least two collaborating providers will be removed. The current referral form for allied health services will be replaced with referral letters, consistent with the arrangements for referrals to medical specialists.	Simplified referrals reduced the need for GPs to find two other collaborating providers before making an allied health referral, speeding up access to care. • Consumers may access allied health professionals more quickly, which is crucial for managing flares, preventing deterioration, and improving function in AMSK conditions. • This may improve GP workflow, potentially allowing them to focus more on care rather than administrative tasks. • The loss of a structured multidisciplinary requirement may weaken coordinated team-based care.
Practice nurses, Aboriginal and Torres Strait Islander health practitioners and Aboriginal health workers: able to assist the GP or prescribed medical practitioner to prepare or review a GP chronic condition management plan.	This change leverages the skills of a broader healthcare team, potentially increasing the number of plans that can be developed and reviewed. This could reduce waiting times for plan initiation or review. • The inclusion of Aboriginal and Torres Strait Islander health practitioners and health workers is particularly important for improving access and culturally safe care for First Nations Australians with AMSK conditions, who often face significant barriers. • These professionals can provide valuable support and education, improving adherence to plans and self-management.
Review: Patients will need to have their GP chronic condition management plan prepared or reviewed in the previous 18 months to continue to access allied health services.	• For AMSK consumers with long-term, progressive conditions, this will ensure plans remain current and relevant, promoting better long-term management. • If the 18-month window is missed, consumers may temporarily loose access to allied health services until a new review is completed.
Fees: the MBS fees for planning and review items will be equalised. The fee for the preparation or review of a plan will be **$156.55** for GPs and **$125.30** for prescribed medical practitioners.	This has no direct cost impact on consumers (if the provider bulk bills). • Equalising fees might encourage more GPs to engage in plan development and review, potentially increasing overall access to plans. • The specific fee amounts may or may not be sufficient to fully cover the time and effort required, which could still influence GP uptake. The impact on out-of-pocket costs for the plan itself is not directly stated but the equalisation aims for consistency.

Appendix D: Summary of AMSK clinical and living guidelines

1. Guidelines for the management of hip and knee osteoarthritis

The RACGP *Guideline for the management of knee and hip osteoarthritis* applies to adults with symptomatic hip and/or knee OA prior to joint replacement and is aimed primarily at primary care[141]. Core recommendations emphasise education, exercise and physical activity, weight management, and prudent use of analgesics; arthroscopy is generally not recommended for OA. The guideline was developed by a multidisciplinary group including consumer representatives.

2. Osteoporosis prevention, diagnosis and management in postmenopausal women and men over 50 years of age

The RACGP *Osteoporosis management and fracture prevention in post-menopausal women and men >50 years*) provides evidence-based recommendations for prevention of first fracture, early diagnosis, post-fracture identification, and management of secondary causes[142]. The 2024 update includes recommendations for the use of fracture risk assessment tools, the risk of rebound vertebral fracture following denosumab cessation, the removal of strontium as a therapy, the clarification of 'imminent' or 'very high' fracture risk in patients, the importance of calcium and vitamin D status and the use of osteoanabolic therapies.

3. Guidelines for preventative activities in general practice

The RACGP *Guidelines for preventive activities in general practice (The Red Book)* sets cross-cutting principles for screening and prevention, including AMSK-related advice (e.g., exercise to reduce falls/fracture risk) and references to osteoporosis prevention and assessment pathways[143].

4. National guide to preventive healthcare for Aboriginal and Torres Strait Islander people

The *National guide to preventive healthcare for Aboriginal and Torres Strait Islander people* supports opportunistic, integrated preventive care (including annual health checks), with recommendations relevant to AMSK health, such as promoting regular physical activity and assessing bone health in older adults[144].

5. Living Guidelines

The living guidelines are produced by the Australia and New Zealand Musculoskeletal (ANZMUSC) Clinical Trials Network, the Australian Rheumatology Association (ARA) and Cochrane Musculoskeletal[145].

An Australian Living Guideline for the Pharmacological Management of Inflammatory Arthritis seeks to present the best available, current scientific evidence to assist decision making in the pharmacological management of the most common forms of inflammatory arthritis (rheumatoid arthritis, axial spondylarthritis, and psoriatic arthritis) and is updated regularly via MAGICapp. It supports shared decision-making and treat-to-target principles, and provides up to date recommendations on conventional, biologic and targeted synthetic DMARDs, based on current evidence.

An Australian Living Guideline for the Management of Juvenile Idiopathic Arthritis provides continually updated, evidence-based recommendations to guide pharmacological management in children and young people with JIA, supporting clinician–family shared decisions.

6. Osteoarthritis of the Knee Clinical Care Standard

The Australian Commission on Safety and Quality in Health Care *Osteoarthritis of the Knee Clinical Care Standard*[146] aims to improve the timely assessment and optimal management for patients with knee osteoarthritis, and to enhance symptom control, psychological wellbeing, quality of life, participation in usual activities, and to lessen the disability cause by knee osteoarthritis. This Standard relates to the care that people aged 45 years and over who are suspected of having knee osteoarthritis should receive, including early clinical assessment, diagnosis and ongoing non-surgical management, referral to non-general practitioner specialists, and the consideration of surgery if indicated.

7. Rheumatoid Arthritis Clinical Care Standard

The Australian Rheumatology Association *Rheumatoid Arthritis Clinical Care Standard (RACCS)*[147] aims to improve the early diagnosis and management of rheumatoid arthritis in adults. The quality statements focus on 12 specific areas of care where improvements should lead to better health outcomes and an improved quality of life for people who live with rheumatoid arthritis.

8. Low Back Pain Clinical Care Standard

The Australian Commission on Safety and Quality in Health Care *Low Back Pain Clinical Care Standard*[148] aims to improve the early assessment, management, review and appropriate referral of people with this common health condition. This Standard provides a road map for healthcare practitioners to help patients manage low back pain episodes early and reduce their chance of ongoing problems by providing eight quality standards describing the care that should be provided, and a set of indicators to support monitoring and quality improvement.

9. Standards of Care for children and young people with Juvenile Idiopathic Arthritis

The Australian Paediatric Rheumatology Group (APRG) *Standards of Care for children and young people with Juvenile Idiopathic Arthritis*[149] aims to define contemporary minimum standards for the care of children and young people with JIA in Australia, improve access to quality care and promote equitable care provision, enable healthcare services to evaluate and benchmark the care they provide against a minimum acceptable standard, and to provide a basis for audit and quality assurance of health care delivery. The standards focus on 7 domains of care.

Appendix E: Research funding allocation by Burden of Disease Area (method)

An extract of awarded Medical Research Future Fund (MRFF) grants current to 24 September 2025 (n=1,766; non-embargoed only) was classified to Australian Burden of Disease (ABDS) groups using a rule-based text search of project titles and summaries. A keyword lexicon was developed from the AIHW disease expenditure database (17 ABDS groups and associated conditions). Terms reflected clinical nomenclature, common synonyms, and UK/US spelling variants (for example, tumour/tumor, haemorrhage/hemorrhage).

Conditions not represented in ABDS groups ("examination and observation", "well care" (e.g., healthy pregnancy/postpartum, routine counselling), and "treatment of risk factors" (e.g., obesity, hypertension, tobacco)) were excluded from the lexicon to avoid forcing allocations outside the study frame. Related clinical conditions (for example, gestational diabetes within reproductive/maternal, substance use within mental health) remained in scope if disease focused.

The classifier applied ordered category blocks (cardiovascular, cancer, musculoskeletal, etc.), assigning the first match; a final "not attributable to BoD area" label captured records without a disease-group match. To reduce false positives, ambiguous short tokens and abbreviations were pruned or replaced after pilot testing on a random sample of 20 grants (for example, removing "UTI" where it triggered words like revolutionise). The AMSK and cardiovascular blocks were expanded and prioritised to maximise correct allocation of high-priority burden areas.

Iterative refinements targeted gaps observed in the "not attributable" set (for example, adding terms such as peripheral artery disease, bronchiectasis, Huntington disease, Prader–Willi syndrome, Q fever/CMV/Buruli ulcer, inclusion body myositis/CRPS). After refinement, 240 of 1766 grants remain unassigned or appropriately retained as "not attributable to BoD area" (for example, platform, genomics, or system-level projects without a specific disease focus).

To correct for known under-reporting of musculoskeletal projects in standard MRFF reporting, all grants identified as AMSK-related underwent manual verification by subject matter experts to ensure accuracy. Comparative data for other disease groups (CVD, Cancer, Mental Health, etc.) was derived using the same keyword and Burden of Disease classification logic but did not undergo individual manual audit due to dataset volume. Consequently, while AMSK figures represent verified investment, comparative figures should be interpreted as indicative estimates based on publicly available project descriptions.

Musculoskeletal search terms

AIHW disease categories

Other musculoskeletal
Osteoarthritis
Back pain and problems
All conditions
Rheumatoid arthritis
Gout

Search terms

Ankylosing spondylitis
Arthritis
Arthroplasty
Arthroscopy
Axial spondylarthritis
Back pain
Bone mineral density
Chondral
Complex regional pain syndrome
Crps
Enthesitis
Fibromyalgia
Fragility fracture
Gout
Hip fracture
Hip replacement
Joint replacement
Knee pain
Knee replacement
Low back
Lower back
Lupus
Msk
Musculoskeletal
Myositis
Osteoarthritis
Osteochondral
Osteopenia
Osteoporosis
Osteoporotic
Osteotomy
Orthopaedic
Psoriatic arthritis
Rheumatoid
Rheumatology
Rotator cuff
Rotator cuff tear
Sarcopenia
Sciatica
Scoliosis
Shoulder pain
Sjogren
Sjögren
Spinal fusion
Spondylarthritis
Spondylitis
Tendinitis
Tendinopathy
Tendon
Tissue engineering
Vertebral fracture

Appendix F. Current MRFF Missions

Table 10 Current MRFF Mission Overview: level of funding and number of funded initiatives

	Funded MRFF Initiatives 01/05/25	Sum of total grants awarded
The Million Minds Mental Health Research Mission is investing $125 million to support a million Australians with mental health issues. This funding will enable access to new approaches to prevention, diagnosis, treatment and recovery.	39	$103,060,915.78
The Stem Cells Therapies Mission will provide $150 million to support stem cell research to deliver innovative, safe, and effective treatments.	61	$102,600,156.38
The Australian Brain Cancer Mission is investing $126.4 million to support research into brain cancer. This consists of $50 million from the Australian Government through the Medical Research Future Fund (MRFF) and $76.40 million to date in commitments from the Funding Partners It aims to improve the quality and length of life of people with brain cancer. In the long term, the Mission aims to defeat brain cancer.	12	$33,244,938.94
The Cardiovascular Health Mission is investing $220 million. It brings together researchers, health professionals, industry and patients to make transformative improvements in heart and vascular health and stroke for all Australians.	102	$160,065,218.21
The Dementia, Ageing and Aged Care Mission is investing $185 million. It supports older Australians to maintain their health and quality of life as they age, live independently for longer, and access quality care when they need it.	63	$111,158,920.66
The Genomics Health Futures Mission is investing $500.1 million in genomic research. It will improve testing and diagnosis for many diseases; help personalise treatment options to better target and improve health outcomes. It will also reduce unnecessary interventions and health costs.	96	$300,285,751.33
The Indigenous Health Research Fund is investing $160 million in Indigenous-led research to tackle health issues facing Aboriginal and Torres Strait Islander people.	69	$131,451,312.57
The Traumatic Brain Injury Mission is investing $50 million to improve patient recovery after brain injury. It will support projects that predict recovery outcomes or identify the most effective care and treatments.	14	$18,267,342.35
The Low Survival Cancers Mission will invest $150 million to investigate ways to improve outcomes for Australians with cancers where less than 50% of people survive more than 5 years after diagnosis. It will give people with pancreatic, lung and liver cancer, among others, greater hope for a longer future with their family and friends.	Due to commence 2027-28	
The Reducing Health Inequities Mission will invest $150 million to address inequities in health outcomes. The mission will address the poorer health outcomes experienced by groups including First Nations people, LGBTIQA+ people, people with a disability and people from diverse backgrounds, and improve access to quality health services and ensure they are safe, appropriate and welcoming. Will commence 2027-28.	Due to commence 2027-28	

Appendix G. Strategic Pillar Analysis

Table 11 Strategic Pillar Analysis - mapping and validation against key national priorities

Strategic pillars	MRFF Priorities	NHMRC Priorities	Productivity Agenda Priorities	National Digital Health
Collaboration and Engagement	1. Consumer driven research 9. Priority Population 8. Aboriginal and Torres Strait Islander Health and Wellbeing	1. Aboriginal and Torres Strait Islander health 4. Multiple long-term health conditions	1. Creating a dynamic and resilient economy 4. Delivering quality care more efficiently	1.1. Connect care 2.1. Support strong consu health literacy 2.3. Enhance consent ma and flexible health inform exchange 3.3.Support equitable he
Funding & Sustainability	2. Research Infrastructure and Capability 7. Health and medical research capacity and capability	Enabling factor for all priorities	1. Creating a dynamic and resilient economy 5. Investing in cheaper, cleaner energy and the net zero transformation	1.3. Enhance and maintai integrated digital solutio
Health innovation potential	2. Research Infrastructure and Capability 4. Effective and high value care 5. Preventive and Public Health Research 6. Primary care research 12. Artificial Intelligence and Digital Health	2. Artificial intelligence in health 3. Emerging health threats and emergencies	3. Harnessing data and digital technology 4. Delivering quality care more efficiently	1.1. Connect care 1.3. Enhance and maintai integrated digital solutio 3.1. Improve and expand 3.2. Integrate personal de 4.1. Use health informatic and public health purpos 4.2. Plan for emerging da and technology such as a intelligence, spatial data,
Research & Evidence Generation	2. Research Infrastructure and Capability 7. Health and medical research capacity and capability	Core goal of all NHMRC priorities	3. Harnessing data and digital technology 4. Delivering quality care more efficiently	2.2. Increase availability o information 4.1. Use health informatic and public health purpos 4.2. Plan for emerging da and technology such as a intelligence, spatial data, 4.3. Monitor and evaluate and progress
System and Policy influence/ advocacy	Ultimate goal of MRFF Missions	Ultimate goal of all NHMRC funded research	4. Delivering quality care more efficiently 5. Investing in cheaper, cleaner energy and the net zero transformation	1.1. Connect care 2.2. Increase availability o information 2.3. Enhance consent ma and flexible health inform exchange 3.1. Improve and expand 3.3.Support equitable he 4.1. Use health informatic and public health purpos 4.3. Monitor and evaluate and progress
Workforce & Capacity	7. Health and medical research capacity and capability 2. Research Infrastructure and Capability	Core function of all grant streams	2. Building a skilled and adaptable workforce	1.2. Enable a digitally reac

Strategy	The National Science and Research Priorities	Health and Medical Research Strategy Goals	Health and Medical Research Strategy Issues/Themes
mer digital nagement nation alth access	2. Supporting healthy and thriving communities 3.Elevating Aboriginal and Torres Strait Islander knowledge systems	5. Cover the entire sector and include all levels of government, industry, philanthropy, academia and consumers. 2. Optimise existing money in health and medical research, encourage greater coordination and partnerships across the sector and improve efficiency and effectiveness of research efforts	2. Supporting Aboriginal and Torres Strait Islander research priorities and processes 1. Establishing health and medical research priorities, now and in the future 6. Enhancing research processes
n modern and ns	Enabling factor for all priorities	2. Optimise existing money in health and medical research, encourage greater coordination and partnerships across the sector and improve efficiency and effectiveness of research efforts	3. Optimising available health and medical research funding 4. Addressing infrastructure and other indirect costs of research 7. Strengthening and sustaining the research workforce
n modern and ns virtual care evices on for research es ta sources rtificial genomics	2. Supporting healthy and thriving communities 1. Transitioning to a net zero future	1. All Australians benefit from health and medical research by producing better health outcomes for the community 4. Help build a sustainable research pipeline from discovery and innovation to translation and commercialisation	5. Enabling translation of research into health policy/clinical practice and commercial products 6. Enhancing research processes 7. Strengthening and sustaining the research workforce 8. Embracing emerging technology including artificial intelligence
f health on for research es ta sources rtificial genomics e outcomes	2. Supporting healthy and thriving communities 3.Elevating Aboriginal and Torres Strait Islander knowledge systems	1. All Australians benefit from health and medical research by producing better health outcomes for the community 2. Optimise existing money in health and medical research, encourage greater coordination and partnerships across the sector and improve efficiency and effectiveness of research efforts	1. Establishing health and medical research priorities, now and in the future 5. Enabling translation of research into health policy/clinical practice and commercial products 9. Measuring impact and success of Australian health and medical research.
f health nagement nation virtual care alth access on for research es e outcomes	2. Supporting healthy and thriving communities 1. Transitioning to a net zero future 4. Protecting and restoring Australia's environment	3. Foster a strong research workforce and create the attractive investment environment necessary for a sustainable research pipeline from discovery and innovation to translation and commercialisation 5. Cover the entire sector and include all levels of government, industry, philanthropy, academia and consumers.	5. Enabling translation of research into health policy/clinical practice and commercial products 9. Measuring impact and success of Australian health and medical research. 4. Addressing infrastructure and other indirect costs of research
dy workforce	Enabling factor for all priorities		7. Strengthening and sustaining the research workforce 4. Addressing infrastructure and other indirect costs of research

Appendix H. Risk and Opportunity Analysis

Table 12 Risk and Opportunity Analysis for Mission, Centre of Excellence, and Centre of Research Excellence

Entity	Phase	Type	Description
MRFF Mission	Establishment	Risk	Failure to achieve national consensus on the Mission's focu priorities.
MRFF Mission	Establishment	Risk	The steering committee / proposal group is not perceived nationally representative.
MRFF Mission	Establishment	Risk	Limited support from key academic, consumer, peak or pr bodies.
MRFF Mission	Establishment	Risk	The economic case is not considered sufficiently compellin
MRFF Mission	Establishment	Risk	Competing health priorities (e.g. pandemic, cancer) dimin support.
MRFF Mission	Establishment	Opportunity	The development process fosters national collaboration ar direction.
MRFF Mission	Establishment	Opportunity	Secure pre-commitment letters of support from all states, and major institutions.
MRFF Mission	Implementation & Operations	Risk	Overly bureaucratic governance slows decision making an innovation.
MRFF Mission	Implementation & Operations	Risk	Inability to secure post-MRFF funding risks dismantling inf
MRFF Mission	Implementation & Operations	Risk	Delays in establishing complex data infrastructure due to t privacy issues.
MRFF Mission	Implementation & Operations	Risk	Failure to fund research aligned with national priorities, lea duplication or poor translation.
MRFF Mission	Implementation & Operations	Risk	Difficulty balancing national priorities with depth in specif areas.
MRFF Mission	Implementation & Operations	Risk	Inability to demonstrate measurable impact on outcomes efficiency.
MRFF Mission	Implementation & Operations	Risk	Lack of sustained pipeline or incentives for AMSK research
MRFF Mission	Implementation & Operations	Opportunity	Support for large-scale, national trials and programs.
MRFF Mission	Implementation & Operations	Opportunity	Fund "blue-sky" research, system reform, and digital inno scale.
MRFF Mission	Implementation & Operations	Opportunity	Serve as a front door for international partnerships and lar
MRFF Mission	Implementation & Operations	Opportunity	Establish research fellowships to build sustainable researcl
MRFF Mission	Implementation & Operations	Opportunity	Inform national health policy and clinical guidelines throu creation and dissemination.
MRFF Mission	Implementation & Operations	Opportunity	Drive adoption of high-value care through funding definit

	Strategic pillar	Likelihood	Impact	Score	Action
us and	Collaboration and Engagement	Likely (4)	Severe (5)	20	**Barrier**
as	Collaboration and Engagement	Likely (4)	Major (4)	16	**Barrier**
ofessional	Collaboration and Engagement	Unlikely (2)	Major (4)	8	**Mitigate**
ng or robust.	Funding and Sustainability	Moderate (3)	Major (4)	12	**Significant**
ish political	Funding and Sustainability	Moderate (3)	Severe (5)	15	**Significant**
nd unified	Collaboration and Engagement	Almost certain (5)	Moderate (3)	15	**Invest**
territories,	System and Policy Influence	Moderate (3)	Transformational (5)	15	**Invest**
d	Collaboration and Engagement	Likely (4)	Moderate (3)	12	**Significant**
frastructure.	Funding and Sustainability	Moderate (3)	Severe (5)	15	**Significant**
echnical/	Health Innovation Potential	Likely (4)	Major (4)	16	**Barrier**
ading to	Research and Evidence Generation	Likely (4)	Moderate (3)	12	**Significant**
ic sub-	Research and Evidence Generation	Moderate (3)	Major (4)	12	**Significant**
or system	System and Policy Influence	Unlikely (2)	Major (4)	8	**Mitigate**
ers.	Workforce and Capacity	Moderate (3)	Major (4)	12	**Significant**
	Research and Evidence Generation	Almost certain (5)	Major (4)	20	**Prioritise**
vation at	Health Innovation Potential	Almost certain (5)	Transformational (5)	25	**Strategic Focus**
rge trials.	Health Innovation Potential	Moderate (3)	Major (4)	12	**Invest**
n workforce.	Workforce and Capacity	Almost certain (5)	Major (4)	20	**Prioritise**
gh evidence	System and Policy Influence	Likely (4)	Major (4)	16	**Prioritise**
ive trials.	System and Policy Influence	Likely (4)	Major (4)	16	**Prioritise**

Entity	Phase	Type	Description
DoH CoE	Establishment	Risk	Government does not view AMSK (or the proposed scope) sufficient priority for a CoE.
DoH CoE	Establishment	Risk	The proposal lacks distinction from existing research instit programs.
DoH CoE	Establishment	Risk	No senior government champion supports the proposal.
DoH CoE	Establishment	Risk	Host institution lacks national standing or infrastructure.
DoH CoE	Establishment	Risk	Key research institutions resist centralisation or exclusion f leadership.
DoH CoE	Establishment	Risk	Consumer leadership is not well-integrated at design or g levels.
DoH CoE	Establishment	Opportunity	Unified consumer and clinical stakeholder coalition suppo bid.
DoH CoE	Establishment	Opportunity	Framing the CoE as a long-term, cost-saving investment e appeal.
DoH CoE	Establishment	Opportunity	Alignment with an existing national health priority increas traction.
DoH CoE	Implementation & Operations	Risk	Change in government or leadership shifts funding priorit
DoH CoE	Implementation & Operations	Risk	Prioritisation of short-term deliverables stifles long-term, l impact research.
DoH CoE	Implementation & Operations	Risk	Budget limitations constrain capacity for national trials or infrastructure.
DoH CoE	Implementation & Operations	Risk	Research outcomes remain localised to host institution; lin national reach.
DoH CoE	Implementation & Operations	Risk	Difficulty building partnerships beyond the initial network
DoH CoE	Implementation & Operations	Risk	Innovation efforts are narrow or lack translation mechanis
DoH CoE	Implementation & Operations	Opportunity	Can fund high-quality research in defined areas aligned t priorities.
DoH CoE	Implementation & Operations	Opportunity	Becomes a national expert body and policy resource in its
DoH CoE	Implementation & Operations	Opportunity	Stable funding enables investment in a focused research w
DoH CoE	Implementation & Operations	Opportunity	Can test and implement innovative care models in partner state health systems.
DoH CoE	Implementation & Operations	Opportunity	Government credibility helps attract international collabor
DoH CoE	Implementation & Operations	Opportunity	Localised consumer engagement supports targeted, relev innovations.
NHMRC CRE	Establishment	Risk	Funding is time-limited and dependent on NHMRC grant

	Strategic pillar	Likelihood	Impact	Score	Action
) as a	Funding and Sustainability	Moderate (3)	Severe (5)	15	**Significant**
utes or	Funding and Sustainability	Likely (4)	Major (4)	16	**Barrier**
	System and Policy Influence	Moderate (3)	Major (4)	12	**Significant**
	System and Policy Influence	Unlikely (2)	Major (4)	8	**Mitigate**
rom CoE	Collaboration and Engagement	Moderate (3)	Major (4)	12	**Significant**
overnance	Collaboration and Engagement	Unlikely (2)	Moderate (3)	6	**Watch**
rts the CoE	Collaboration and Engagement	Moderate (3)	Major (4)	12	**Invest**
nhances	System and Policy Influence	Likely (4)	Major (4)	16	**Prioritise**
es political	System and Policy Influence	Likely (4)	Major (4)	16	**Prioritise**
ies.	Funding and Sustainability	Moderate (3)	Severe (5)	15	**Significant**
high-	System and Policy Influence	Likely (4)	Moderate (3)	12	**Significant**
	Research and Evidence Generation	Moderate (3)	Major (4)	12	**Significant**
nited	Research and Evidence Generation	Likely (4)	Major (4)	16	**Barrier**
.	Collaboration and Engagement	Moderate (3)	Moderate (3)	9	**Mitigate**
ms.	Health Innovation Potential	Moderate (3)	Major (4)	12	**Significant**
o DoH	Research and Evidence Generation	Likely (4)	Major (4)	16	**Prioritise**
field.	Collaboration and Engagement	Likely (4)	Major (4)	16	**Prioritise**
workforce.	Workforce and Capacity	Almost certain (5)	Moderate (3)	15	**Invest**
rship with	Health Innovation Potential	Almost certain (5)	Major (4)	20	**Prioritise**
rators.	Collaboration and Engagement	Likely (4)	Moderate (3)	12	**Invest**
ant	Collaboration and Engagement	Moderate (3)	Moderate (3)	9	**Leverage**
outcomes.	Funding and Sustainability	Likely (4)	Major (4)	16	**Barrier**

Entity	Phase	Type	Description
NHMRC CRE	Establishment	Risk	Limited policy visibility and no formal government manda
NHMRC CRE	Establishment	Risk	No requirement for translation or implementation limits re impact.
NHMRC CRE	Establishment	Opportunity	Aligned with digital health, registries, and data infrastructu
NHMRC CRE	Establishment	Opportunity	Supports development of a focused research agenda and outputs.
NHMRC CRE	Establishment	Opportunity	Brings together academic and clinical researchers across c
NHMRC CRE	Implementation & Operations	Risk	Research findings may not influence national guidelines o decisions.
NHMRC CRE	Implementation & Operations	Risk	Scope is too narrow to enable national-scale or system-wi relevance.
NHMRC CRE	Implementation & Operations	Risk	New or interdisciplinary approaches may be untested or d integrate.
NHMRC CRE	Implementation & Operations	Opportunity	Facilitates synthesis and collaboration across existing resea networks.
NHMRC CRE	Implementation & Operations	Opportunity	Agile format supports ideation, piloting, and prototyping
NHMRC CRE	Implementation & Operations	Opportunity	Enables knowledge sharing and communication between partners.
NHMRC CRE	Implementation & Operations	Opportunity	Can contribute to national strategy if externally legitimise
NHMRC CRE	Implementation & Operations	Opportunity	Enables high-impact, focused studies addressing national gaps.
NHMRC CRE	Implementation & Operations	Opportunity	Fellowship pathways support the development of future re leaders.
NHMRC CRE	Implementation & Operations	Opportunity	Strengthens national alignment through shared leadershi sites.
NHMRC CRE	Implementation & Operations	Opportunity	Supports early evidence for emerging technologies or pri populations.
NHMRC CRE	Implementation & Operations	Opportunity	Embeds career researchers through structured fellowship

	Strategic pillar	Likelihood	Impact	Score	Action
te.	System and Policy Influence	Moderate (3)	Major (4)	12	**Significant**
eal-world	Health Innovation Potential	Moderate (3)	Moderate (3)	9	**Mitigate**
ure goals.	Health Innovation Potential	Likely (4)	Major (4)	16	**Prioritise**
clear	Research and Evidence Generation	Almost certain (5)	Major (4)	20	**Prioritise**
isciplines.	Collaboration and Engagement	Likely (4)	Moderate (3)	12	**Invest**
r funding	System and Policy Influence	Likely (4)	Moderate (3)	12	**Significant**
de	Research and Evidence Generation	Likely (4)	Major (4)	16	**Barrier**
ifficult to	Research and Evidence Generation	Moderate (3)	Major (4)	12	**Significant**
arch	Workforce and Capacity	Almost certain (5)	Moderate (3)	15	**Invest**
of solutions.	Health Innovation Potential	Moderate (3)	Major (4)	12	**Invest**
research	Collaboration and Engagement	Likely (4)	Moderate (3)	12	**Invest**
d.	System and Policy Influence	Almost certain (5)	Moderate (3)	15	**Invest**
or clinical	Research and Evidence Generation	Likely (4)	Major (4)	16	**Prioritise**
esearch	Workforce and Capacity	Almost certain (5)	Moderate (3)	15	**Invest**
p across	Collaboration and Engagement	Likely (4)	Moderate (3)	12	**Invest**
rity	Health Innovation Potential	Moderate (3)	Major (4)	12	**Invest**
s.	Workforce and Capacity	Likely (4)	Major (4)	16	**Prioritise**

Appendix I: Gender Responsive Care (Project Proposal)

Potential vision: An Australian system where sex and gender responsive AMSK care is standard, equitable, and cost-effective.

Aims

- **Quantify** sex and gender specific burden, care quality, and access across life stages (adolescence, reproductive years, menopause/post-menopause), stratified by First Nations status and remoteness.
- **Design and evaluate** gender responsive models of care for OA, perinatal rheumatology, and inflammatory back pain/axSpA.
- **Reduce diagnostic delay** for women with inflammatory AMSK disease through primary care decision supports and optimised imaging pathways.
- **Advance equity** via consumer led research and codesigned, culturally safe AMSK care for First Nations and CALD women.
- **Demonstrate value** through robust health economic evaluation and an implementation/ scaleup plan for national adoption.
- **Build capacity:** train EMCRs, clinicians, and consumers in sex/gender analysis, cultural safety, implementation, and health economics.

Potential programs of work

1. National data platform & dashboards

- Link and harmonise key datasets (e.g., ABS/AIHW, hospital/ED, primary care, AOANJRR, PBS/ MBS, maternity and rheumatology clinic data).
- Build dashboards tracking access, quality, outcomes, and time to diagnosis.
- **Methods:** data linkage, causal inference, small area variation, intersectional stratification.

2. Gender-focused centred implementation trials

- Multisite RCTs and hybrid effectiveness implementation designs testing packages that improve uptake of guideline recommended first line care.
- Components: tele-enabled group exercise, caregiving-friendly scheduling, menopause specific weight management content, health coaching, and referral nudges in primary care.
- **Outcomes:** pain/function, surgery deferral, quality of life, adherence, cost effectiveness.

3. Perinatal rheumatology pathways

- Stepped wedge evaluation of integrated clinics jointly run by rheumatology and obstetrics.
- Standardised protocols for preconception counselling, medication optimisation, flare prevention, and postpartum care.
- **Outcomes:** disease control, maternal/infant outcomes, breastfeeding compatibility, patient experience, costs.

4. First Nations women's AMSK care

- First Nations led codesign with ACCHOs and community partners; evaluate culturally safe models (e.g., community-based physio/exercise, yarning based education, tele rheumatology with local connectors).
- **Outcomes:** defined by communities; include Patient Reported Outcome and Experience Measures.

5. Health economics & scaleup

- Cost utility/benefit analyses of programs of work from health system and societal perspectives (productivity, carer time).
- Budget impact models; scaleup scenarios; commissioning guidance and policy briefs.

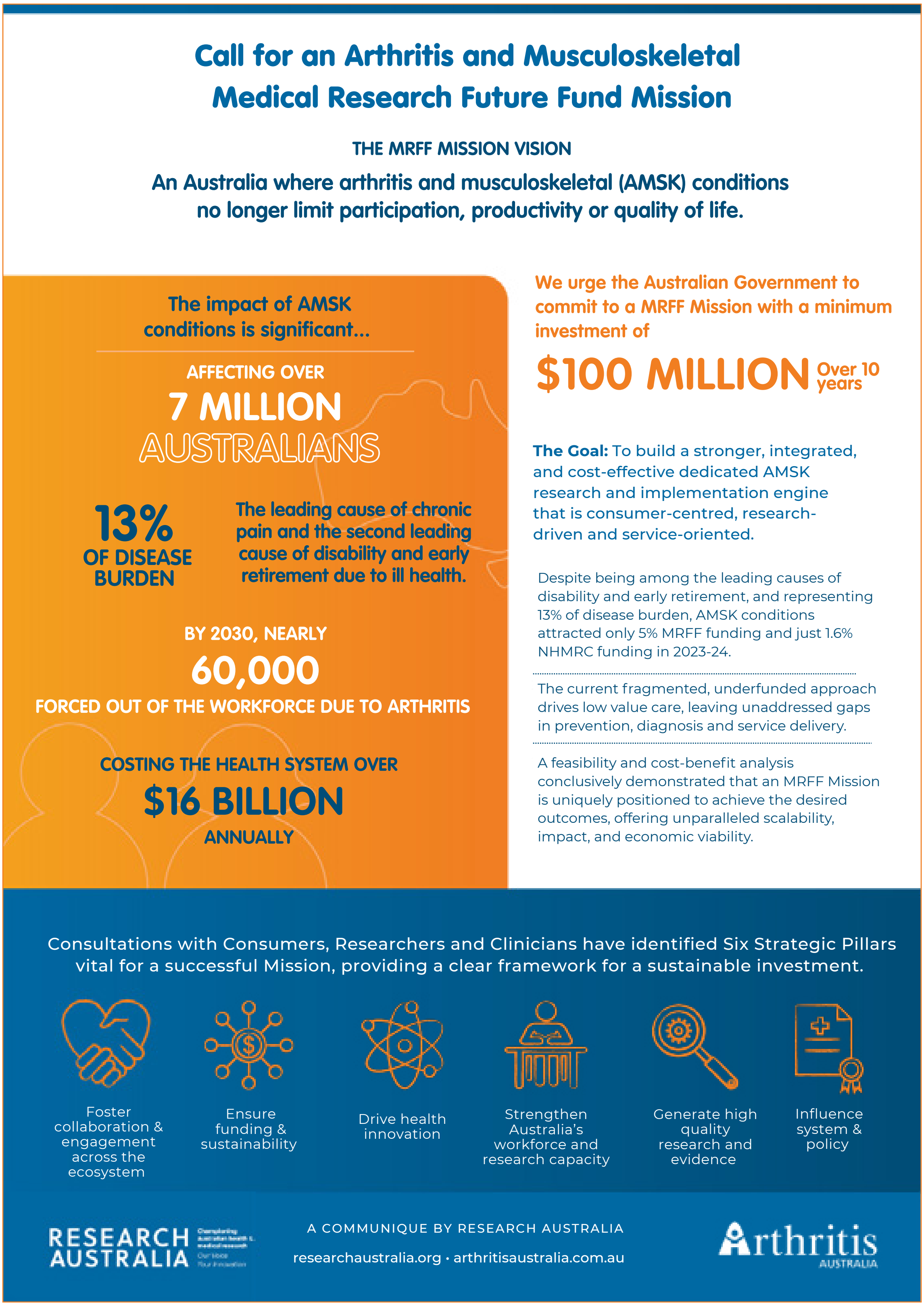
Investment opportunities

- **Develop a Targeted Call for Research (TCR)** with the NHMRC- a one-time request for grant applications to address a specific health issue where there is a significant research knowledge gap or unmet need. (5 years, $ varies)
- **Primary health network (PHN) social-prescribing pilots (women-targeted):** Co-design a link-worker–enabled AMSK pathway with 1–2 PHNs that already run social prescribing (e.g., Sydney North Health Network; Brisbane South PHN
  - Ways to Wellness; North Western Melbourne PHN; Western Victoria PHN's Social Connection grants).
  - Build referral triggers in HealthPathways, include transport/childcare brokerage, and evaluate uptake of first-line OA care and pain/function outcomes.
  - Attach a small independent evaluation (e.g., with ADMA/ASPIRE) to any PHN pilot to quantify reach, adherence, wellbeing, and primary-care utilisation changes; publish rapid reports to build momentum
- **Jean Hailes x Arthritis Australia consumer tool:** A plain-English conversation aid for GP visits (menopause, pregnancy, contraception, medicines, physical activity), plus a self-management planner. Co-brand with Jean Hailes and distribute via their digital channels and GP waiting rooms, measure decision quality and care uptake.
- **Perinatal rheumatology micro-network:** Partner obstetrics units and rheumatology clinics in 2–3 hospitals to create an integrated pre-conception–postpartum clinic and tele-advice line. Include medication safety pathways and lactation guidance; track flares, maternal/infant

outcomes, and patient experience.

- **First Nations women's AMSK care with ACCHOs:** Fund ACCHO-led pilots (yarning education, group exercise, local connectors, tele-rheumatology). Governance and measures set by community; include training for physio/allied health in culturally safe AMSK care.
- **Women's sport injury & OA prevention stream:** With AIS/state sport bodies and women's leagues (netball, AFLW, football), develop and deploy neuromuscular injury-prevention programs plus rapid post-injury rehab. Follow knee injury cohorts for OA risk markers; create a scale-up package for clubs.
- **Work and AMSK initiative:** Work with e.g. Bupa Foundation, HCF Research Foundation and major employers, test workplace bundles (flexible duties, physio access, pacing education). Focus on productivity outcomes: absenteeism/presenteeism, pain/function, retention.
- **Comorbidity partnerships:**
  - **Healthy Bones Australia** (osteoporosis) for falls/fracture + OA bundles in women 50+.
  - **Diabetes Australia** (metabolic risk) for weight-management + OA programs.
  - **Beyond Blue** (depression/anxiety, pain) to add mental-health modules to AMSK care.
  - **Endometriosis Australia** for pelvic pain navigation with AMSK pathways.
- **Philanthropy and aligned funders to approach:** Bupa Health Foundation; HCF Research Foundation; Ian Potter Foundation; Paul Ramsay Foundation (place-based disadvantage); state health promotion agencies

Appendix J: Communiqué



Call for an Arthritis and Musculoskeletal Medical Research Future Fund Mission

THE MRFF MISSION VISION

An Australia where arthritis and musculoskeletal (AMSK) conditions no longer limit participation, productivity or quality of life.

The impact of AMSK conditions is significant…

AFFECTING OVER
7 MILLION AUSTRALIANS

13% OF DISEASE BURDEN

The leading cause of chronic pain and the second leading cause of disability and early retirement due to ill health.

BY 2030, NEARLY
60,000
FORCED OUT OF THE WORKFORCE DUE TO ARTHRITIS

COSTING THE HEALTH SYSTEM OVER
$16 BILLION
ANNUALLY

We urge the Australian Government to commit to a MRFF Mission with a minimum investment of

$100 MILLION Over 10 years

The Goal: To build a stronger, integrated, and cost-effective dedicated AMSK research and implementation engine that is consumer-centred, research-driven and service-oriented.

Despite being among the leading causes of disability and early retirement, and representing 13% of disease burden, AMSK conditions attracted only 5% MRFF funding and just 1.6% NHMRC funding in 2023-24.

The current fragmented, underfunded approach drives low value care, leaving unaddressed gaps in prevention, diagnosis and service delivery.

A feasibility and cost-benefit analysis conclusively demonstrated that an MRFF Mission is uniquely positioned to achieve the desired outcomes, offering unparalleled scalability, impact, and economic viability.

Consultations with Consumers, Researchers and Clinicians have identified Six Strategic Pillars vital for a successful Mission, providing a clear framework for a sustainable investment.

- Foster collaboration & engagement across the ecosystem
- Ensure funding & sustainability
- Drive health innovation
- Strengthen Australia's workforce and research capacity
- Generate high quality research and evidence
- Influence system & policy

RESEARCH AUSTRALIA

A COMMUNIQUE BY RESEARCH AUSTRALIA

researchaustralia.org • arthritisaustralia.com.au

Arthritis AUSTRALIA

Return on investment of an Arthritis and MSK Mission

64
RESEARCH AND CLINICAL JOBS SUPPORTED
per year

2.2X
POTENTIAL REDUCTION IN HEALTH SYSTEM + PRODUCTIVITY BUDEN

$361M
POTENTIAL NET RETURN TO AUSTRALIAN ECONOMY

EVERY $1 =
$4.61
ROI VALUE

Based on an independent cost benefit analysis of a $100 Million Mission over 10 years.

RESEARCH STREAMS

Foundational research infrastructure

To unify health data, track outcomes, and drive evidence-based improvements in care

Equitable access to evidence based healthcare

To accelerate discovery of innovative cost-effective interventions and care models that support delivery of faster, high-value care to all Australians with AMSK conditions.

Prevention and workforce planning

To develop and scale interventions that prevent AMSK conditions, reduce the impact of injuries, and boost workforce participation

Supporting recovery and return to work

To trial and implement new rehabilitation and support models that help Australians manage AMSK conditions and remain active in the workplace

OUTCOMES OF THE MRFF MISSION

FOR CONSUMERS & COMMUNITIES

Tackle health inequalities by embedding consumer partnerships, reducing pain and disability, and enabling economic & social participation.

FOR THE HEALTHCARE SYSTEM

Drive evidence based care by containing the unsustainable growth of surgeries, supporting a sustainable workforce, and securing the research pipeline.

FOR AUSTRALIA'S FUTURE

As a global leader in AMSK research, we will reduce disease burden, drive evidence informed policy, and boost economic productivity.

This is a vital opportunity to transform the lives of millions of Australian children and adults, reduce the strain on our healthcare system, and build a more productive economy. Arthritis Australia urges the Australian Government to align its research investment with the burden of Arthritis and Musculoskeletal conditions by funding this critical MRFF Mission.

RESEARCH AUSTRALIA

A COMMUNIQUE BY RESEARCH AUSTRALIA

researchaustralia.org • arthritisaustralia.com.au

Arthritis AUSTRALIA

Appendix A: Report 1 key findings

Understanding the arthritis research landscape

1. **There is limited Australian research activity in many of the strategic priorities identified in the *National Strategic Action Plan for Arthritis*.** Arthritis Australia should explicitly align its research strategy with existing research. Alternatively, it could seek to initiate research in areas identified by the National Action Plan as strategic priorities where there is currently a lack of research activity.
2. **Arthritis Australia has a key convening role to play in bringing the right researchers and charities together with government to develop new research partnerships capable of attracting larger-scale funding.** At least 72% of Australian health and medical researchers engaged in arthritis research have been funded, at least in part, by Arthritis Australia. Arthritis Australia could identify and support leading and emerging investigators working on National Action Plan priority areas, and partner with government agencies and other philanthropic organisations to attract alternative sources of research funding. Together with its state affiliates, Arthritis Australia has Australia's largest and most established national network of arthritis advocates and consumers. The approach to research funding should seek to leverage this national network, developing projects which are consumer co-designed and deliver cross-jurisdictional impact.
3. **Of the (at least) 33 Australian charities focused on arthritis, Arthritis Australia is the only organisation that explicitly advocates for all types of arthritis.** Arthritis Australia can also position itself as the group that ensures research is conducted into arthritis in general and into types of arthritis that are not currently addressed by any other philanthropic organisations.
4. **There is an opportunity in both Arthritis Australia's agenda and in the broader research community to more clearly delineate between arthritis specifically and musculoskeletal disease more generally.** By clarifying this distinction, Arthritis Australia could further elucidate its "niche" in the sector, enhance its impact and open up broader funding and advocacy opportunities.
5. **By stipulating how consumers should be involved in its research-related activities, Arthritis Australia can ensure that the research it funds meets the needs of consumers.** Modes of consumer engagement are not currently specified in Arthritis Australia's research program but could be incorporated to assist in the ongoing articulation and refinement of research priorities.
6. **There is a dynamic private sector with an interest in arthritis research.** There are opportunities for Arthritis Australia to collaborate with the private sector, including pharmaceutical and medical technology companies, through targeted research funding partnerships and to advocate for private investment in particular kinds of research.

Appendix B: Report 2 key findings

What consumers want: identifying the unmet needs of Australians with arthritis

Common themes from the literature

There is a body of existing work looking at what consumers themselves identify as the unmet healthcare needs of those living with – or caring for those living with – JIA, OA and RA. A search across 81 Australian and international academic publications and grey literature sources identified the following common themes associated with future research needs and unmet needs of people with JIA, OA and RA:

Common consumer themes identified in both Australian and international literature:

1. Efficacy and safety of new medications and management plans, including alternative therapies, especially for pregnancy planning
2. Information about management strategies, including available drugs, drug safety assistive devices, exercise, alternative therapies etc.
3. Information about effective community engagement (e.g. financial management, work, activities of daily living[60])
4. Increased service and specialist availability and accessibility
5. Knowing where to find reliable information

Common consumer themes in Australian literature only:

6. Increased clinician knowledge of the condition
7. Guidance for self-management
8. Effective and collaborative care coordination, including having all clinicians working together and providing non-conflicting information

Common consumer themes in international literature only:

9. Information on prognosis and likely progression
10. Better practitioner communication skills and rapport development
11. Opportunities for social interaction with others with the same condition and their families

Key consumer themes across the three types of arthritis investigated – RA, OA, JIA

Using a combination of Roundtables and short survey, Research Australia engaged over 100 people with lived experience of RA, OA and JIA.

1. Help is hard to find

Getting an accurate diagnosis and appropriate referral to ensure adequate arthritis management is very difficult. 42% of survey respondents saw multiple clinicians/allied health professionals before receiving a diagnosis.

2. Care is hard to coordinate

Care teams commonly communicate ineffectively with each other (e.g. by not using My Health Record) and there is a common wish to have a disease coordinator as a 'one stop shop' for care coordination.

3. Managing arthritis is expensive

It is expensive to pay for treatment (including medications and many appointments with different clinicians), attend in-person appointments (e.g. travel costs) and make lifestyle modifications (e.g. to the person's environment, work and school commitments). Financial support is important.

4. Loss of physical and mental function is common

Function loss can prevent the person from participating in activities they enjoy and can lead to discrimination at school and other areas (e.g. public transport).

5. A grieving process is associated with diagnosis

People diagnosed with arthritis can grieve the loss of current and future function. Psychological support during the grieving process is needed by people with arthritis but is not being sufficiently provided.

6. Conflicting information is commonly given

Conflicting information can cause confusion, frustration and disappointment in the care being received. People often do their own research to find answers and clarity. The majority of survey respondents (65%) discovered new ways to manage and treat their arthritis from doing their own research. However, the quality and quantity of information can be inadequate, particularly for JIA.

7. Allied health is a valued source of arthritis management and treatment

Medications are an important part of arthritis management. However, consumers report significant benefit from the inclusion of allied health. Specifically, for people with OA and RA, the use of diet and exercise strategies have helped them manage their condition but information about what strategies to try and their evidence of effect is infrequently provided. This theme often coincided with the suggestion for better access to allied health services. Traditional pharmaceutical treatments continue to be the main source of treatment for survey respondents (66%). However, exercise management (58%), nutrition and diet modification (41%) and physiotherapy (37%) were also highlighted as useful treatment methods.

8. Arthritis is complex

Arthritis is often described as a condition affecting the joints. This is oversimplified and misses many of the signs and symptoms that are associated with arthritis that negatively impact quality of life. Increased awareness of the various common and less common signs and symptoms associated with arthritis is needed to support people with arthritis to participate in society without prejudice.

9. Everyone's arthritis experience is different.

There is no 'one size fits all' to arthritis management regardless of the arthritis subtype. People want tailored care that meets their unique needs. Consumers also commented on the need for intersectional research (e.g. CALD communities, Aboriginal and Torres Strait Islander Peoples), understanding the economic and demographic factors that may affect the quality of patient outcomes, improving community understanding of arthritis, and offering mental health support.

10. Consumers want to be involved in research

Arthritis Australia has a very engaged and active consumer cohort. This was reflected in discussions at the three Roundtables and from survey respondents. 91% of survey respondents said they would be willing to assist in designing research into arthritis. No respondents answered 'no' to this question, and 9% (one respondent) was 'unsure and/or don't know'.

Although there are several overlapping themes that have been identified across the three roundtables and survey, it must be acknowledged that people with each condition have unique experiences. This is especially true for the JIA group, where children and their carers made it very clear that it is time that JIA was recognised and managed independently of other arthritis types.

Summary of recommendations

Advocacy targets

Key short- and medium- term advocacy projects that will enable Arthritis Australia to build the case for increased public investment in arthritis research and refine the 'ask' to government and other research funders. Arthritis Australia's advocacy for a dedicated MRFF arthritis and musculoskeletal research mission, as indicated in the recent 2022 election platform, is an admirable long-term target. **However, Research Australia believes there are key short- and medium-term actions Arthritis Australia can take which would assist in further building the case for this MRFF mission.**

1. **Conduct economic analysis of the financial,** impact of arthritis people's lives and Australia's health system and economy. This should explore both the personal cost of arthritis and the broader, productivity cost of arthritis to Australia's economy. This will build the case for co-investment in research priorities identified by Arthritis Australia.

2. **Harness a community of research active consumers by developing a model for consumer research engagement and piloting it across one form of arthritis.** Research Australia recommends piloting models of consumer engagement across Rheumatoid Arthritis, utilising Arthritis Australia's existing platform of myRA and connections to the Australian Rheumatology Association. This will not only ensure Arthritis Australia's funding program is consumer driven but also enable Arthritis Australia to leverage government investment and attract philanthropic investment for research identified as a priority by consumers.

3. **Capitalise on the increased policy attention on juvenile arthritis (e.g. Australian Government Inquiry into juvenile rheumatic diseases) through seeking opportunities for partnership with other arthritis charities focused on juvenile arthritis,** e.g. Juvenile Arthritis Foundation Australia (JAFA). Arthritis Australia's focus on arthritis in general is its key point of difference. Partnering with smaller, more targeted charities within the space will assist in positioning Arthritis Australia as the overarching umbrella group for all arthritis charities.

4. **Develop a national survey of people with arthritis to capture their lived experience, the needs of people who are living with the disease and what their research priorities are.** This could be modelled on the Arthritis Foundation's Live Yes! INSIGHTS program[11] or Research Australia's annual public opinion poll[12]. This will provide Arthritis Australia with a consistent evidence base of priorities and areas of unmet need to take to government and/or other arthritis research funders.

---

[11] https://www.arthritis.org/liveyes/insights

[12] https://researchaustralia.org/reports/public-opinion-polling-2/

Improved research administration

Research Australia recommends Arthritis Australia look at the application and judging process for funds it issues through the National Research Program. **This will help ensure Arthritis Australia's research funding has the most impact for the communities Arthritis Australia represents and is a sustainable source of funding for progressing innovative, leading edge arthritis research in Australia.** Arthritis Australia could or should consider:

1 **Balance the research portfolio between investigator led and priority-driven research.** This would allow Arthritis Australia to maintain its key, foundational role in supporting the existing pool of Australian arthritis research talent, while driving new research activity in areas such as allied health and the coordination of arthritis care that consumers have identified as a priority.

2 **Map existing arthritis research infrastructure, registries and biobanks.** Arthritis research is predominantly investigator-led, aimed at improving research quality and capacity such as the development of the Australian Arthritis and Autoimmune Biobank Collaborative (A3BC) and the development and expansion of arthritis registries including the OPAL Rheumatology database.[13] However these efforts to date have tended to be siloed and fragmented. There is scope to enhance collaboration through a mapping exercise of existing arthritis registries and biobanks, pulling together the fragments into a national approach to arthritis research infrastructure.

3 **Revisit the grants application process so impact is considered from the outset.** This could be modelled on research impact statements that identify how their research findings would potentially be translated to improve the health of Australians living with arthritis.

4 **Develop an Evaluation Framework** for Arthritis Australia's National Research Program, combining traditional measures of economic impact with translational health system impacts and consumer or patient sentiment to evaluate research impact. This would be particularly impactful in an evidence-led approach to future funding requests or co-investment opportunities.

5 **Develop a reporting tool for the research funding program.** Research Australia recommends Arthritis Australia explore novel software such as Grow Impact[14] which enables funding bodies and researchers to communicate the impact of their investment to society, other funding stakeholders, and demonstrate return on investment.

---

[13] National Strategic Action Plan for Arthritis, p.32, https://arthritisaustralia.com.au/wordpress/wpcontent/uploads/2019/03/2019-National-Strategic-Action-Plan-for-Arthritis.pdf

[14] For more information see: https://www.growimpact.com.au/

References

1 Research Australia. 2022. Understanding the Arthritis Research Landscape. https://arthritisaustralia.com.au/wordpress/wp-content/uploads/2022/11/Research-Australia_Understanding-the-arthritis-research-landscape_web-%C6%92.pdf

2 Research Australia, 2022. What Consumers Want: Identifying the Unmet Needs of Australians Living with Arthritis. https://arthritisaustralia.com.au/wordpress/wp-content/uploads/2022/11/Research-Australia_What-consumers-want-identifying-the-unmet-needs-of-Australians-living-with-arthritis_web-%C6%92.pdf

3 Research Australia. 2022. Impactful Arthritis Research. https://arthritisaustralia.com.au/wordpress/wp-content/uploads/2022/11/Research-Australia_Impactful-Arthritis-Research_web-R-%C6%92.pdf

4 Department of Health. 2019. National Strategic Action Plan for Arthritis.

5 Department of Health. 2019. National Strategic Action Plan for Osteoporosis.

6 Ackerman, I., Gorelik, A., Berovic, D. & Buchbinder, R. 2024. The Future Burden of Arthritis in Australia: Projections to the year 2040.

7 Australian Institute of Health and Welfare. (2024). Australian Burden of Disease Study 2024. https://www.aihw.gov.au/reports/burden-of-disease/australian-burden-of-disease-study-2024

8 Arthritis Australia. June 2025. Fast Facts. https://arthritisaustralia.com.au/what-is-arthritis/fastfacts/

9 Golder, V. & Schachna, L. 2013. Ankylosing spondylitis: An Update. Australian Family Physician 42(11). The Royal Australian College of General Practitioners https://www.racgp.org.au/afp/2013/november/ankylosing-spondylitis

10 Australian Institute of Health and Welfare. (2023). Juvenile arthritis. https://www.aihw.gov.au/reports/chronic-musculoskeletal-conditions/juvenile-arthritis

11 Ackerman, I., Gorelik, A., Berovic, D. & Buchbinder, R. 2024. The Future Burden of Arthritis in Australia: Projections to the year 2040.

12 Australian Institute of Health and Welfare. (2024). Osteoarthritis. https://www.aihw.gov.au/reports/chronic-musculoskeletal-conditions/osteoarthritis

13 Bernardes, C. M., Houkamau, K., Lin, I., Taylor, M., Birch, S., Claus, A., Bryant, M., Meuter, R., Isua, J., Gray, P., Kluver, J. P., Jones, C., Ekberg, S., & Pratt, G. (2022). Communication and access to healthcare: Experiences of Aboriginal and Torres Strait Islander people managing pain in Queensland, Australia. Frontiers in pain research (Lausanne, Switzerland), 3, 1041968.

14 Australian Institute of Health and Welfare. (2025). Health system spending on disease and injury in Australia 2023–24. https://www.aihw.gov.au/reports/health-welfare-expenditure/health-system-spending-disease-injury-aus-2023-24

15 Australian Institute of Health and Welfare. (2025). Health system spending on disease and injury in Australia 2023–24. https://www.aihw.gov.au/reports/health-welfare-expenditure/health-system-spending-disease-injury-aus-2023-24

16 Australian Institute of Health and Welfare. (2025). Health system spending on disease and injury in Australia 2023–24. https://www.aihw.gov.au/reports/health-welfare-expenditure/health-system-spending-disease-injury-aus-2023-24

17 Royal Australian College of General Practitioners. Guideline for the management of knee and hip osteoarthritis. 2nd edn. East Melbourne, Vic: RACGP, 2018 .

18 Arthritis Australia, 2024. ARTHRITIS AT BREAKING POINT: Greater access to physios, dietitians, and other allied health essential to stem staggering rise in hip and knee replacements. https://arthritisaustralia.com.au/parliamentary-summit-on-better-care-for-arthritis-and-musculoskeletal-conditions-2/

19 The Australian Commission on Safety and Quality in Health Care. Prioritised list clinical domains for clinical quality registry development: Final report. Sydney: ACSQHC; 2016

20 Docking S, Ademi Z, Barton C, et al. (2024) Lifetime Cost-Effectiveness of Structured Education and Exercise Therapy for Knee Osteoarthritis in Australia. ***JAMA Netw Open.*** 2024;7(10)

21 Lin, I. B., Bunzli, S., Mak, D. B., Green, C., Goucke, R., Coffin, J., & O'Sullivan, P. B. (2018). Unmet Needs of Aboriginal Australians With Musculoskeletal Pain: A Mixed-Method Systematic Review. Arthritis care & research, 70(9), 1335–1347.

22 Australian Institute of Health and Welfare (2011). The use of disease-modifying anti-rheumatic drugs for the management of rheumatoid arthritis. Arthritis series no. 16. Cat. no. PHE 138. Canberra: AIHW.

23 American College of Rheumatology. 2025. Understanding Rheumatic Disease Treatments: conventional DMARDS vs. Biologic Medications. 11/6/25. https://rheumatology.org/patient-blog/understanding-rheumatic-disease-treatments-conventional-dmards-vs-biologic-medications

24 Health Direct. 2023. Disease modifying antirheumatic drugs (DMARDs) for arthritis. https://www.healthdirect.gov.au/disease-modifying-antirheumatic-drugs-for-arthritis-dmards

25 American College of Rheumatology. 2025. Understanding Rheumatic Disease Treatments: conventional DMARDS vs. Biologic Medications. 11/6/25. https://rheumatology.org/patient-blog/understanding-rheumatic-disease-treatments-conventional-dmards-vs-biologic-medications

26 Ackerman, I., Bohensky, M., Pratt, C., Gorelik, A., & Liew, D. 2016. Counting The Cost Part 1: Healthcare costs. https://arthritisaustralia.com.au/wordpress/wp-content/uploads/2017/09/Final-Counting-the-Costs_Part1_MAY2016.pdf

27 Australian Institute of Health and Welfare. (2025). Health system spending on disease and injury in Australia 2023–24. https://www.aihw.gov.au/reports/health-welfare-expenditure/health-system-spending-disease-injury-aus-2023-24

28 Ackerman, I. N., Gorelik, A., Berkovic, D., & Buchbinder, R. (2025). The projected burden of arthritis among adults and children in Australia to the year 2040: a population-level forecasting study. The Lancet. Rheumatology, 7(3), e187–e196.

29 Arthritis Australia. June 2025. Fast Facts. https://arthritisaustralia.com.au/what-is-arthritis/fastfacts/

30 Schofield, D., Shrestha, R., & Cunich, M. 2016. Counting The Cost Part 2: Economic Costs. https://arthritisaustralia.com.au/wordpress/wp-content/uploads/2017/09/Final-Counting-the-Costs_Part2_MAY2016.pdf

31 Schofield, D., Shrestha, R., & Cunich, M. 2016. Counting The Cost Part 2: Economic Costs. https://arthritisaustralia.com.au/wordpress/wp-content/uploads/2017/09/Final-Counting-the-Costs_Part2_MAY2016.pdf

32 Docking SI, Ackerman IN, Buchbinder R, Zomer E, Liew D, Ademi Z. Productivity Losses Due to Long-Term Back Problems in Working-Age Australians. JAMA Netw Open. 2025;8(8):e2527284.

33 Duffield SJ, Ellis BM, Goodson N, Walker-Bone K, Conaghan PG, Margham T, Loftis T. The contribution of musculoskeletal disorders in multimorbidity: Implications for practice and policy. Best Pract Res Clin Rheumatol. 2017 Apr;31(2):129-144.

34 Australian Institute of Health and Welfare. (2025). Multimorbidity in Australia. https://www.aihw.gov.au/reports/chronic-disease/multimorbidity-in-australia

35 Australian Institute of Health and Welfare. (2025). Multimorbidity in Australia. https://www.aihw.gov.au/reports/chronic-disease/multimorbidity-in-australia

36 Kirtley OJ, Rodham K, Crane C. Understanding suicidal ideation and behaviour in individuals with chronic pain: a review of the role of novel transdiagnostic psychological factors. Lancet Psychiatry. 2020 Mar;7(3):282-290. doi: 10.1016/S2215-0366(19)30288-3. Epub 2020 Jan 23.

37 Australian Institute of Health and Welfare. (2025). ***Multimorbidity in Australia.*** https://www.aihw.gov.au/reports/chronic-disease/multimorbidity-in-australia

38 Ernste FC, Sánchez-Menéndez M, Wilton KM, Crowson CS, Matteson EL, Maradit Kremers H. Cardiovascular risk profile at the onset of psoriatic arthritis: a population-based cohort study. Arthritis Care Res (Hoboken). 2015 Jul;67(7):1015-21.

39 Williams, A., Kamper, S.J., Wiggers, J.H. et al. Musculoskeletal conditions may increase the risk of chronic disease: a systematic review and meta-analysis of cohort studies. BMC Med 16, 167 (2018)

40 Singh JA, Cameron C, Noorbaloochi S, Cullis T, Tucker M, Christensen R, Ghogomu ET, Coyle D, Clifford T, Tugwell P, Wells GA. Risk of serious infection in biological treatment of patients with rheumatoid arthritis: a systematic review and meta-analysis. Lancet. 2015 Jul 18;386(9990):258-65.

41 Cappelli LC, Bingham CO 3rd. Expert Perspective: Immune Checkpoint Inhibitors and Rheumatologic Complications. Arthritis Rheumatol. 2021 Apr;73(4):553-565. doi: 10.1002/art.41587. Epub 2021 Mar 5.

42 Australian Health Minister s’ Advisor y Council, 2017, National Strategic Framework for Chronic Conditions. Australian Government Canberra.

43 Department of Health, 2021. National Preventative Health Strategy 2021-2030.

44 Department of Health. 2019. National Strategic Action Plan for Arthritis.

45 Department of Health. 2019. National Strategic Action Plan for Osteoporosis.

46 Department of Health, Disability and Ageing. 2025. Medical Research Future Fund (MRFF) Grant Recipients. (24/9/25) https://www.health.gov.au/resources/publications/medical-research-future-fund-mrff-grant-recipients?language=en

47 National Health and Medical Research Council. 2025. Research Funding Statistics and Data: NHMRC funding for major disease, conditions or health areas. https://www.nhmrc.gov.au/funding/outcomes-and-data-research/research-funding-statistics-and-data

48 National Health and Medical Research Council. 2025. Outcomes of funding rounds. https://www.nhmrc.gov.au/funding/data-research/outcomes

49 Australian Institute of Health and Welfare (2024) Australian Burden of Disease Study 2024, AIHW, Australian Government.

50 Australian Institute of Health and Welfare. (2024). Diabetes: Australian facts. https://www.aihw.gov.au/reports/diabetes/diabetes

51 Neurological Alliance Australia, 2025. Pre-budget submission for the 2025-2026 Federal Budget. https://neurologicalalliance.org.au/wp-content/uploads/NAA-Pre-budget-submission-2025-26-1.pdf

52 Australian Institute of Health and Welfare (2024) Heart, stroke and vascular disease: Australian facts, AIHW, Australian Government

53 Australian Institute of Health and Welfare (2024) Chronic musculoskeletal conditions , AIHW, Australian Government

54 Australian Institute of Health and Welfare (2025). Prevalence and impact of mental illness. AIHW, Australian Government.

55 Australian Bureau of Statistics. (2022). Health Conditions and Risks: Cancer. https://www.abs.gov.au/statistics/health/health-conditions-and-risks/cancer/latest-release

56 Australian Institute of Health and Welfare. (2025). Health system spending on disease and injury in Australia 2023–24. https://www.aihw.gov.au/reports/health-welfare-expenditure/health-system-spending-disease-injury-aus-2023-24

57 Department of Health, Disability and Ageing. 2025. Medical Research Future Fund (MRFF) Grant Recipients. (24/9/25) https://www.health.gov.au/resources/publications/medical-research-future-fund-mrff-grant-recipients?language=en

58 Department of Health, Disability and Ageing. 2025. Medical Research Future Fund (MRFF) Grant Recipients. (24/9/25) https://www.health.gov.au/resources/publications/medical-research-future-fund-mrff-grant-recipients?language=en

59 National Health and Medical Research Council. 2025. Research Funding Statistics and Data: NHMRC funding for major disease, conditions or health areas. https://www.nhmrc.gov.au/funding/outcomes-and-data-research/research-funding-statistics-and-data

60 National Health and Medical Research Council. 2025. Research Funding Statistics and Data: NHMRC funding for major disease, conditions or health areas. https://www.nhmrc.gov.au/funding/outcomes-and-data-research/research-funding-statistics-and-data

61 National Health and Medical Research Council. 2025. Outcomes of funding rounds. https://www.nhmrc.gov.au/funding/data-research/outcomes

62 ACIL Allen (2023). Impact assessment of ARC-funded research summary report. A report for the Australian Research Council

63 Blakely, T. 23/08/24. The Conversation. More money and smarter choices: how to fix Australia's broken NHMRC medical research funding system. https://theconversation.com/more-money-and-smarter-choices-how-to-fix-australias-broken-nhmrc-medical-research-funding-system-188003#:~:text=Ten%20years%20ago%2C%20around%2020,need%20to%20spend%20it%20smarter

64 Blakely, T. 23/08/24. The Conversation. More money and smarter choices: how to fix Australia's broken NHMRC medical research funding system. https://theconversation.com/more-money-and-smarter-choices-how-to-fix-australias-broken-nhmrc-medical-research-funding-system-188003#:~:text=Ten%20years%20ago%2C%20around%2020,need%20to%20spend%20it%20smarter

65 Canadian Institutes of Health Research (2022). About IMHA. https://cihr-irsc.gc.ca/e/8603.html

66 National Institute of Arthritis and Musculoskeletal and Skin Diseases. (2025) About NIAMS. https://www.niams.nih.gov/

67 Research Center for treatment of rheumatic and musculoskeletal diseases (REMEDY). (2025) https://en.remedy-senter.no/

68 Synerkine Pharma. https://synerkinepharma.com/

69 Versus Arthritis. About us: Our History. https://versusarthritis.org/about-us/our-organisation/history/

70 Australian Centre for Evaluation (2025). Cost-Benefit Analysis. Treasury. Canberra, Australian Government.

71 Department of Health (2016). Guidelines for preparing a submission to the Pharmaceutical Benefits Advisory Committee. D. o. Health. Canberra.

72 Allen, A. 2023. Impact assessment of ARC-funded research summary report. A report for the Australian Research Council.

73 Sussex, J., Feng, Y., Mestre-Ferrandiz, J., et al. 2016. Quantifying the economic impact of government and charity funding of medical research on private research and development funding in the United Kingdom. BMC Medicine, 14, 32.

74 Sogi, G. M. 2023. Research Waste. Contemp Clin Dent, 14, 179.

75 ACIL Allen (2023). Impact assessment of ARC-funded research summary report. A report for the Australian Research Council.

76 Health and Medical Research Office (2025). Review of the Medical Research Future Fund Dementia, Ageing and Aged Care Mission. Department of Health and Aged Care. Canberra.

77 Health and Medical Research Office (2024). Review of the Genomics Health Futures Mission. Department of Health and Aged Care. Canberra.

78 Sogi, G. M. 2023. Research Waste. Contemp Clin Dent, 14, 179.

79 Sussex, J., Y. Feng, J. Mestre-Ferrandiz, M. Pistollato, M. Hafner, P. Burridge and J. Grant (2016). "Quantifying the economic impact of government and charity funding of medical research on private research and development funding in the United Kingdom." BMC Medicine 14(1): 32.

80 Manyazewal, T., Woldeamanuel, Y., Oppenheim, C., et al. 2022. Conceptualising centres of excellence: a scoping review of global evidence. BMJ Open, 12, e050419.

81 PWC 2025. International Research Funding Systems: A Comparative Analysis.

82 OECD 2014. Promoting Research Excellence.

83 Deloitte 2016. Australia's health and medical research workforce - expert people providing exceptional returns.

84 PWC (2025). International Research Funding Systems: A Comparative Analysis.

85 Deloitte 2016. Australia's health and medical research workforce - expert people providing exceptional returns.

86 Jones 2024. The 7.3 million Australians living with musculoskeletal conditions are not getting the support they deserve. Critical Public Health.

87 Glover, M., Montague, E., Pollitt, A., et al. 2018. Estimating the returns to United Kingdom publicly funded musculoskeletal disease research in terms of net value of improved health outcomes. Health Research Policy and Systems, 16, 1.

88 Deloitte 2016. Australia's health and medical research workforce - expert people providing exceptional returns.

89 Glover, M., Montague, E., Pollitt, A., et al. 2018. Estimating the returns to United Kingdom publicly funded musculoskeletal disease research in terms of net value of improved health outcomes. Health Research Policy and Systems, 16, 1.

90 ACIL Allen (2023). Impact assessment of ARC-funded research summary report. A report for the Australian Research Council

91 Azoulay, P., J. S. Graff Zivin and G. Manso (2011). "Incentives and creativity: evidence from the academic life sciences." The RAND Journal of Economics 42(3): 527-554.

92 Morgan, B. (2016). In research, time is as important as money. Nature Index, Springer Nature.

93 Jones (2024). "The 7.3 million Australians living with musculoskeletal conditions are not getting the support they deserve. Critical Public Health."

94 Smith, J. B. E., Channon, K. M., Kiparoglou, V., et al. 2019. A macroeconomic assessment of the impact of medical research expenditure: A case study of NIHR Biomedical Research Centres. PLoS One, 14, e0214361.

95 Smith, J. B. E., K. M. Channon, V. Kiparoglou, J. F. Forbes and A. M. Gray (2019). "A macroeconomic assessment of the impact of medical research expenditure: A case study of NIHR Biomedical Research Centres." PLoS One 14(4): e0214361.

96 ACIL Allen (2023). Impact assessment of ARC-funded research summary report. A report for the Australian Research Council.

97 UNSW (2024). The Economic Contribution of Science at UNSW.

98 Health and Medical Research Office (2024). Review of the Medical Research Future Fund Cardiovascular Health Mission. Department of Health and Aged Care. Canberra.

99 Health and Medical Research Office (2024). Review of the Medical Research Future Fund Cardiovascular Health Mission. Department of Health and Aged Care. Canberra.

100 KPMG (2018). Economic Impact of Medical Research in Australia.

101 Department of Health, Disability and Ageing. Medical Research Future Fund. https://www.health.gov.au/our-work/mrff

102 Policy by Proxy. 2024. Review of the Medical Research Future Fund Cardiovascular Health Mission. Report prepared for the Health and Medical Research Office, Department of Health and Aged Care

103 The Centre for International Economics. 2023. Review of the Australian Brain Cancer Mission: Final Report. Report prepared for the Health and Medical Research Office, Department of Health and Aged Care.

104 Nous Group. 2024. Review of the Genomic Health Futures Mission. Report prepared for the Department of Health and Aged Care.

105 University of Technology Sydney. 2022. Million Minds Mental Health Research Mission review: Final report. Report prepared for the Health and Medical Research Office, Department of Health and Aged Care.

106 MH Consulting Group. 2025. Review of the Medical Research Future Fund Dementia, Ageing and Aged Care Mission. Report prepared for the Health and Medical Research Office, Department of health, Disability and Ageing.

107 Royal Commission into Aged Care Quality and Safety. 2021. Final Report: Care, Dignity and Respect. Commonwealth of Australia, Canberra.

108 National Mental Health Commission. 2022. National Mental Health Research Strategy. https://www.mentalhealthcommission.gov.au/sites/default/files/2024-03/national-mental-health-research-strategy_0.pdf

109 Productivity Commission 2020, Mental Health, Report no. 95, Canberra

110 Australian Diabetes Society. 2025. 2025-26 Pre-budget Submission to the Australian Government: Diabetes Research Mission Funded via the MRFF/NHMRC On Behalf of the Australian Diabetes Society, Australian Diabetes Educators Association and Diabetes Australia. https://www.diabetesaustralia.com.au/wp-content/uploads/2025-26_Pre-budget-Submission-Diabetes-Research.pdf

111 Neurological Alliance Australia, 2025. Pre-budget submission for the 2025-26 Federal Budget. https://neurologicalalliance.org.au/wp-content/uploads/NAA-Pre-budget-submission-2025-26-1.pdf

112 Kidney Health Australia. 2022. Strategy. https://assets.kidney.org.au/resources/KHA-Strategy_July-2022.pdf

113 Department of Health, 2021. National Roadmap for Improving the Health of People with Intellectual Disability. Australian Government, Canberra.

114 Ackerman, I., Gorelik, A., Berkovic, D., & Buchbinder, R. 2024. The Future Burden of Arthritis in Australia: Projections to the year 2040. Report prepared for Arthritis Australia.

115 Ackerman, I., Gorelik, A., Berkovic, D., & Buchbinder, R. 2024. The Future Burden of Arthritis in Australia: Projections to the year 2040. Report prepared for Arthritis Australia.

116 Department of Health and Aged Care,2024. #EndGenderBias Survey Summary Report.

117 Headstrong Thinking Limited, What do patients value and need in the diagnosis, treatment and care of axial spondyloarthritis? (2022) London: The National Axial Spondyloarthritis Society.

118 Arthritis Australia, 2024. ARTHRITIS AT BREAKING POINT: Greater access to physios, dietitians, and other allied health essential to stem staggering rise in hip and knee replacements. https://arthritisaustralia.com.au/parliamentary-summit-on-better-care-for-arthritis-and-musculoskeletal-conditions-2/

119 Bernardes, C. M., Houkamau, K., Lin, I., Taylor, M., Birch, S., Claus, A., Bryant, M., Meuter, R., Isua, J., Gray, P., Kluver, J. P., Jones, C., Ekberg, S., & Pratt, G. (2022). Communication and access to healthcare: Experiences of Aboriginal and Torres Strait Islander people managing pain in Queensland, Australia. Frontiers in pain research (Lausanne, Switzerland), 3, 1041968.

120 Lin, I.B., Bunzli, S., Mak, D.B., Green, C., Goucke, R., Coffin, J. and O'Sullivan, P.B. (2018), Unmet Needs of Aboriginal Australians With Musculoskeletal Pain: A Mixed-Method Systematic Review. Arthritis Care Res, 70: 1335-1347. https://doi.org/10.1002/acr.23493

121 Australian Institute of Health and Welfare. (2024). Osteoarthritis. https://www.aihw.gov.au/reports/chronic-musculoskeletal-conditions/osteoarthritis

122 Bernardes, C. M., Houkamau, K., Lin, I., Taylor, M., Birch, S., Claus, A., Bryant, M., Meuter, R., Isua, J., Gray, P., Kluver, J. P., Jones, C.,

Ekberg, S., & Pratt, G. (2022). Communication and access to healthcare: Experiences of Aboriginal and Torres Strait Islander people managing pain in Queensland, Australia. Frontiers in pain research (Lausanne, Switzerland), 3, 1041968.

123 Lagro-Janssen, T., Lo Fo Wong, S., & van den Muijsenbergh, M. (2008). The importance of gender in health problems. The European journal of general practice, 14 Suppl 1, 33–37.

124 Tschon, M., Contartese, D., Pagani, S., Borsari, V., & Fini, M. (2021). Gender and Sex Are Key Determinants in Osteoarthritis Not Only Confounding Variables. A Systematic Review of Clinical Data. Journal of clinical medicine, 10(14), 3178.

125 Segal, N. A., Nilges, J. M., & Oo, W. M. (2024). Sex differences in osteoarthritis prevalence, pain perception, physical function and therapeutics. Osteoarthritis and cartilage, 32(9), 1045–1053.

126 Sibbritt, D., Sundberg, T., Ward, L., Broom, A., Frawley, J., Bayes, J., & Adams, J. (2022). What is the healthcare utilisation and out-of-pocket expenditure associated with osteoarthritis? A cross-sectional study. BMJ open, 12(3)

127 Maniar, N., Verhagen, E., Bryant, A. L., & Opar, D. A. (2022). Trends in Australian knee injury rates: An epidemiological analysis of 228,344 knee injuries over 20 years. The Lancet regional health. Western Pacific, 21, 100409.

128 Australian Institute of Health and Welfare. (2024). Chronic musculoskeletal conditions. https://www.aihw.gov.au/reports/chronic-musculoskeletal-conditions/musculoskeletal-conditions

129 ARA. 2025. Medications and Pregnancy Rheumatoid Arthritis Information for women and men with rheumatoid arthritis thinking about starting a family. https://rheumatology.org.au/Portals/2/Documents/Public/Patients/250211%20Medications%20and%20Pregnancy%20in%20RA_Feb25_final%20.pdf?ver=2025-03-14-110730-287

130 Arthritis Foundation. Family Planning, Pregnancy & Parenting. https://www.arthritis.org/health-wellness/healthy-living/family-relationships/family-planning-pregnancy-parenting

131 Arthritis Australia. What Conumers Want: Identifying the unmet needs of Australians living with Arthritis

132 Ceprnja, D., Chipchase, L., Fahey, P., Liamputtong, P., & Gupta, A. (2021). Prevalence and Factors Associated with Pelvic Girdle Pain During Pregnancy in Australian Women: A Cross-Sectional Study. Spine, 46(14), 944–949.

133 Ceprnja, D., Chipchase, L., Liamputtong, P. et al. "We are not there yet": perceptions, beliefs and experiences of healthcare professionals caring for women with pregnancy-related pelvic girdle pain in Australia. BMC Pregnancy Childbirth 23, 682 (2023).

134 Lin IB, Bunzli S, Mak DB, Green C, Goucke R, Coffin J, et al. Unmet needs of aboriginal Australians with musculoskeletal pain: a mixed-method systematic review. Arthritis Care Res (Hoboken). (2018) 70(9):1335–47

135 Manjari Lahiri, Catharine Morgan, Deborah P. M. Symmons, Ian N. Bruce, Modifiable risk factors for RA: prevention, better than cure?, ***Rheumatology***, Volume 51, Issue 3, March 2012, Pages 499–512,

136 Allied Health Professions Australia. What is allied health? https://www.ahpa.com.au/what-is-allied-health

137 Australian Bureau of Statistics. 1297.0 ANZSRC - Australian and New Zealand Standard Research Classification, 2020. https://www.abs.gov.au/statistics/classifications/australian-and-new-zealand-standard-research-classification-anzsrc/latest-release

138 Statement on Consumer and Community involvement in Health and Medical Research, National Health and Medical Research Council (2016), Consumers Health Forum of Australia.

139 Australian Bureau of Statistics. 1297.0 ANZSRC - Australian and New Zealand Standard Research Classification, 2020. https://www.abs.gov.au/statistics/classifications/australian-and-new-zealand-standard-research-classification-anzsrc/latest-release

140 Australian Bureau of Statistics. 1297.0 ANZSRC - Australian and New Zealand Standard Research Classification, 2020. https://www.abs.gov.au/statistics/classifications/australian-and-new-zealand-standard-research-classification-anzsrc/latest-release

141 The Royal Australian College of General Practitioners. Guideline for the management of knee and hip osteoarthritis. 2nd edn. East Melbourne, Vic: RACGP, 2018.

142 The Royal Australian College of General Practitioners. Osteoporosis prevention, diagnosis and management postmenopausal women and men over 50 years of age. 2nd edn. South Melbourne, Vic: RACGP, 2024.

143 The Royal Australian College of General Practitioners (RACGP). Guidelines for preventive activities in general practice. 10th edn. East Melbourne, Vic: RACGP, 2024.

144 National guide to preventive healthcare for Aboriginal and Torres Strait Islander people: Recommendations. 4th edition. East Melbourne, Vic: RACGP, 2024.

145 Australia & New Zealand Musculoskeletal Clinical Trials Network Australian Living Guidelines., https://anzmusc.org/outputs/australian-living-guidelines/

146 Australian Commission on Safety and Quality in Health Care. Osteoarthritis of the Knee Clinical Care Standard. Sydney: ACSQHC; 2024.

147 Australian Rheumatology Association. 2024. Rheumatoid Arthritis Clinical Care Standard. ARA: 2024. V2. https://rheumatology.org.au/Portals/2/Documents/Public/Professionals/Clinical%20Care%20Standards/RAQS-UPDATE-Clinicians-ACCESS-03-7May24.pdf?ver=2024-05-07-135934-023

148 Australian Commission on Safety and Quality in Health Care. Low Back Pain Clinical Care Standard. Sydney: ACSQHC; 2022.

149 Australian Rheumatology Association. 2025. Standards of Care for children and young people with Juvenile Idiopathic Arthritis – for healthcare professionals. https://rheumatology.org.au/Portals/2/Documents/Public/Professionals/Clinical%20Care%20Standards/ARA_JIA-SoC_2025-09-05.pdf?ver=uUpQet-Dq3vCzo4fv9qe7w%3d%3d

RESEARCH
AUSTRALIA

*Championing
Australian health
& medical research
& innovation*

Arthritis
AUSTRALIA

☎ +61 2 9295 8546
✉ admin@researchaustralia.org
🌐 researchaustralia.org

Sydney
Research Australia Limited
384 Victoria St
Darlinghurst NSW 2010

Canberra
John Curtin School of
Medical Research
Australian National University
131 Garran Rd, Acton ACT 2601