

Draft National Strategic Action Plan for Osteoporosis

March 2019

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About this National Strategic Action Plan

Our Vision: Strong Bones for a Life without Fractures

The National Strategic Action Plan for Osteoporosis (the Plan) is the overarching plan moving forward to address the urgent need for a national prioritised strategic response to address the increasing complex challenges and burden of osteoporosis across Australia.

Osteoporosis is a chronic disease where a person's bones become fragile, leading to an increased risk of fractures. Living with osteoporosis can have an extreme impact on quality of life including ongoing pain, disability and loss of independence.

In 2018, more than 1.2 million Australians were estimated as having osteoporosis¹. However, while osteoporosis is very commonly seen in the Australian primary health care setting, because it is a 'silent' disease with no pain until a fracture takes place, it remains under-diagnosed and under-treated.

Osteoporosis has been estimated as costing the broader health care system over \$3 billion in total with over \$2.1 billion in direct fracture costs per year². This will increase each year with Australia's ageing population. Yet despite the personal and economic burden osteoporosis and fractures have on society, it remains a largely undiagnosed and under-treated disease.

There are a variety of reasons for the low rates of diagnosis and management of osteoporosis in Australia including limited awareness around risks of osteoporosis by health professionals and amongst the general public, operational silos across the healthcare system and a lack of focus on osteoporosis compared to other chronic diseases.

This Plan provides an evidence-based road map to guide national efforts for implementation across the next 2–3 years to:

- broaden Australians awareness and understanding on the importance of bone health throughout their life course;
- improve the quality of life and outcomes for Australians living with osteopenia and osteoporosis;
- reduce the incidence of osteoporosis and associated fragility fractures; and
- reduce the impact and cost of osteoporosis to society and the broader Australian healthcare system.

The Plan aligns closely with and supports the goals, principles and strategic priority areas of the *National Strategic Framework for Chronic Conditions*³ through a shared emphasis on prevention and efficient, effective and appropriate person-centred care to optimise quality of life for people with chronic conditions. Its' intended audiences include the Federal and State and Territory Governments, local health services and aged care providers and funders, clinicians and other health professionals, consumers, researchers and funders.

Importantly, this Plan has been developed with expertise and input from members of the National Osteoporosis Action Plan Stakeholder Group and Working Committee representing key individuals and stakeholder groups across Australia in osteoporosis prevention, management and care and those living with osteoporosis; as well as a broad range of targeted consultations with consumers, clinicians, policy makers and health service providers.

What is Osteoporosis?

Bone plays a critical structural role in the body providing mobility, support and protection and is also an important storehouse for essential minerals. It is in a perpetual state of remodeling throughout life, with the entire skeleton being replaced every 10 years⁴. Remodeling is where old bone and damaged areas are removed (bone resorption) and replaced by new bone. For the amount of bone in our skeleton (bone mass) to remain constant, the amount of bone being resorbed needs to be equivalent to the amount of bone being formed.

As we age, men and women experience a reduction in hormone levels, leading to an imbalance in this bone rebuilding process and leaving bones thinner and more fragile. This is osteoporosis. Other factors can also impact on bone strength, but the great concern with osteoporosis is the increased risk of fracture. When someone has osteoporosis even a slight bump or fall can lead to a broken bone (a fragility fracture, also known as a 'minimal trauma' fracture or MTF)⁵.

Living with osteoporosis can have an extreme impact on quality of life including ongoing pain, disability and loss of independence. It has no signs or symptoms until a fracture occurs⁶ but there are well known risk factors or 'red flags' that signal a person is at risk of developing osteoporosis.

Osteoporosis is a chronic disease that leads to an increased risk of fragility fractures for people living with the condition. The possibility of sustaining a fracture increases exponentially with age, due not only to the progressive decrease in bone mass, but also due to the increased rate of falls among the elderly which are the fastest growing segment of the population⁷. As life expectancy increases for the majority of the world's population, the human and financial costs associated with osteoporotic fractures will also increase dramatically unless preventive action is taken⁸.

While fragility fractures are most common in people over the age of 50 years, they are not an inevitable part of growing old. A healthy lifestyle and bone-protecting treatments – prescribed when a person has been diagnosed with osteoporosis – can more than halve a person's risk of suffering a fragility fracture⁹. The causes of osteoporosis and risk factors are now better understood and we know that healthy behaviours early in life and through adulthood, such as a diet with adequate protein, calcium, optimal vitamin D, and regular progressive weight-bearing exercise, can have a significant effect on bone health in later life¹⁰. Better treatments can also significantly improve quality of life.

The most common secondary cause of osteoporosis is the long-term use of corticosteroids¹¹. This type of medication is very widely used and is often prescribed for the treatment of respiratory disease (asthma), musculoskeletal conditions (rheumatoid arthritis), inflammatory bowel disease and skin disease (severe eczema, psoriasis)¹². One in five patients treated with corticosteroids has an osteoporotic fracture within the first 12 months of treatment. This proportion increases to 50% after 5–10 years¹³.

While a previous fracture is a very strong indicator, other risk factors include a family history of osteoporosis or fractures, low vitamin D levels, low intake of calcium, low body weight, physical inactivity, and smoking or excess alcohol consumption. Osteoporosis is also common in people with malabsorption disorders, such as coeliac disease and with certain hormonal disorders, including overactive thyroid or parathyroid, liver or kidney disease, early menopause or low testosterone¹⁴. It is also increasingly common in those with diabetes mellitus. Similarly, hormonal treatments for breast and prostate cancer, antiepileptic drugs¹⁵ and HIV and its treatments can also lead to bone loss.

The challenge

In Australia, osteoporosis has been a National Health Priority Area since 2002 and its' diagnosis, treatment and management is currently only funded nationally for people over the age of 70 years and for those on certain medications or suffering select conditions (e.g. prolonged corticosteroid therapy or rheumatoid arthritis).

In 2018, over 1.2 million Australians were estimated as having osteoporosis¹⁶. Due to population growth and ageing, without improvements in diagnosis and treatment of osteoporosis, the rate of fractures is estimated

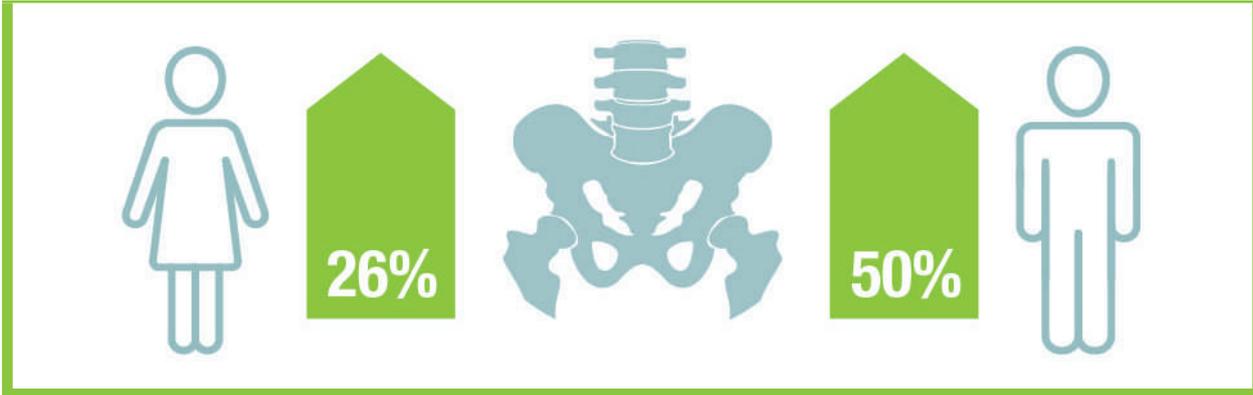
to double by 2030. However, while osteoporosis is very commonly seen in the Australian primary health care setting because it is a ‘silent’ disease with no pain until a fracture takes place, it remains under-diagnosed and under-treated.

The prevalence and risks of osteoporosis increases with age and it is estimated that more than 80% of the population over the age of 70 have osteoporosis or osteopenia (low bone mineral density indicating high risk for osteoporosis) in Australia¹⁸

More than 50% of postmenopausal women and 30% of men over the age of 60 years will suffer at least one MTF during their remaining life time which leads to living with ongoing pain, reduced mobility, loss of function and associated loss of quality of life, and the real possibility of further fractures. Yet as many as 80% postmenopausal women and 90% of men go untreated despite having presented with a fragility fracture¹⁹

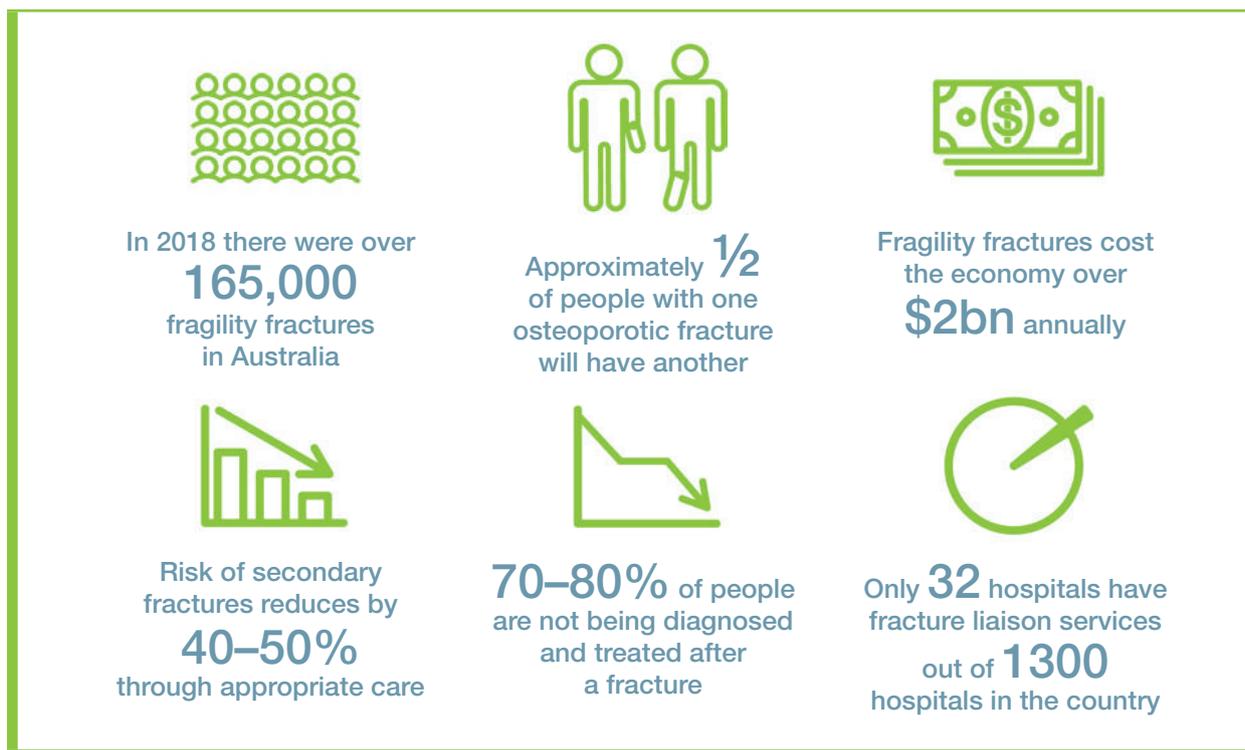
Major fragility fractures such as hip and spine fractures can cause long-term pain, disability, institutionalisation and even death. Furthermore, Aboriginal Torres Strait Islander people have a substantially greater fracture risk than non-Indigenous Australians with Indigenous men 50% and women 26% more likely to experience a minimal trauma hip fracture compared to non-Indigenous men and women respectively²⁰ (refer to *Figure 1*). They are also on average much younger at the time of fracture.

Figure 1: **Increased hip fracture risk in Aboriginal and Torres Strait Island people**



Every year in Australia over 165,000 hospital fragility fractures are recorded in people over the age of 50 years which leads to considerable costs to individuals, their families and the healthcare system²¹ It has been estimated that there is one fracture due to poor bone health every 3.4 minutes costing the Australian healthcare system in excess of \$2.1 billion per year in direct costs including medical care such as hospital stays, surgery, emergency assistance, rehabilitation and community care (home care)²² This personal and economic burden of osteoporosis will increase with the ageing Australian population and by 2022 the cost of osteoporosis is projected to rise to \$3.84 billion²³ Furthermore, the increase in demand for residential aged care after a hip fracture (about 2,700 aged care places in 2017) has been estimated to cost the Australian government around \$83 million in aged care subsidies²⁴ (refer to *Figure 2*).

Figure 2: **The challenge of osteoporosis and associated fragility fractures in Australia**



Costly fractures could be avoided

The risk of a first fracture can be reduced through appropriate care and interventions such as education, chronic disease management plans, allied health arrangements, and specific osteoporosis pharmacotherapy.

Many people go undiagnosed and receive no treatment even after one or more fractures have occurred with up to 80% of people not receiving appropriate investigation or treatment, even after a fracture.²⁵ Furthermore, in 2017 it was estimated that less than 10% of people over the age of 70 years accessed subsidised diagnostic services (BMD scanning) for osteoporosis.²⁶

There are a variety of reasons for the low rates of diagnosis and management of osteoporosis in Australia including limited awareness around risks of osteoporosis by health practitioners and amongst the general public, operational silos across the health care system, and a lack of focus on osteoporosis compared with other chronic diseases.

Almost all osteoporotic fractures require costly medical care and require multi-disciplinary coordinated care to manage the recovery after a fracture.

Health services involved in fracture management include:

- diagnosis using services from radiographers, nuclear medicine physicians, radiologists, general practitioners (GPs)
- management using services from GPs, nurses, dietitians, exercise physiologists, aged care workers, clinical nurse specialists
- treatment using services from endocrinologists, GPs, geriatricians, pharmacists, aged care nurses/nurses, rheumatologists
- care from Emergency Departments, radiologists, endocrinologists, orthopaedic surgeons
- rehabilitation using physiotherapy, and exercise physiologists.

Once an individual has suffered an osteoporotic fracture, they are at high risk of further MTFs and identifying and treating these individuals is referred to as secondary fracture prevention. In general, a prior fragility fracture increases the risk of future fracture by at least two to three fold.²⁷

Fragmentation across the health and ageing sectors, limited resources, and lack of awareness around secondary fracture prevention have been identified as some of the main challenges to people receiving care and treatment.²⁸

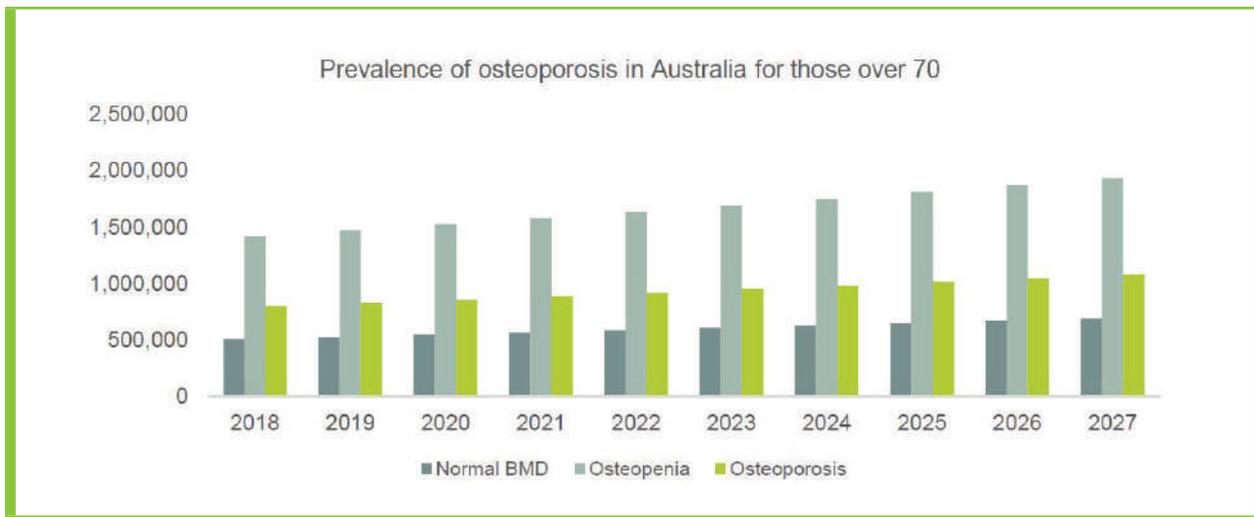
To reduce the risk of re-fracture, best practice osteoporosis management guidelines indicate that all patients over 50 years of age with MTF should be investigated for osteoporosis via blood tests and DXA; have calcium and vitamin D checked, plus education, falls risk assessment and lifestyle recommendations, and treatment initiated where BMD is low.²⁹

However, as lines of responsibility for investigation and follow-up are often not clear, many patients leave hospital following a MTF without a management plan or treatment in place. This represents a care gap with most patients not investigated for osteoporosis and at high risk of a second fracture.

Impact of osteoporosis if nothing changes

Australia is an ageing population, with the number of Australians aged 65 and over expected to more than double in the next 40 years which will have significant cost implications on the health and aged care sectors.³⁰ As seen in *Figure 3*, over the next 10 years the proportion of Australians aged over 70 will increase and a growing number of those will suffer from osteoporosis and osteopenia.³¹

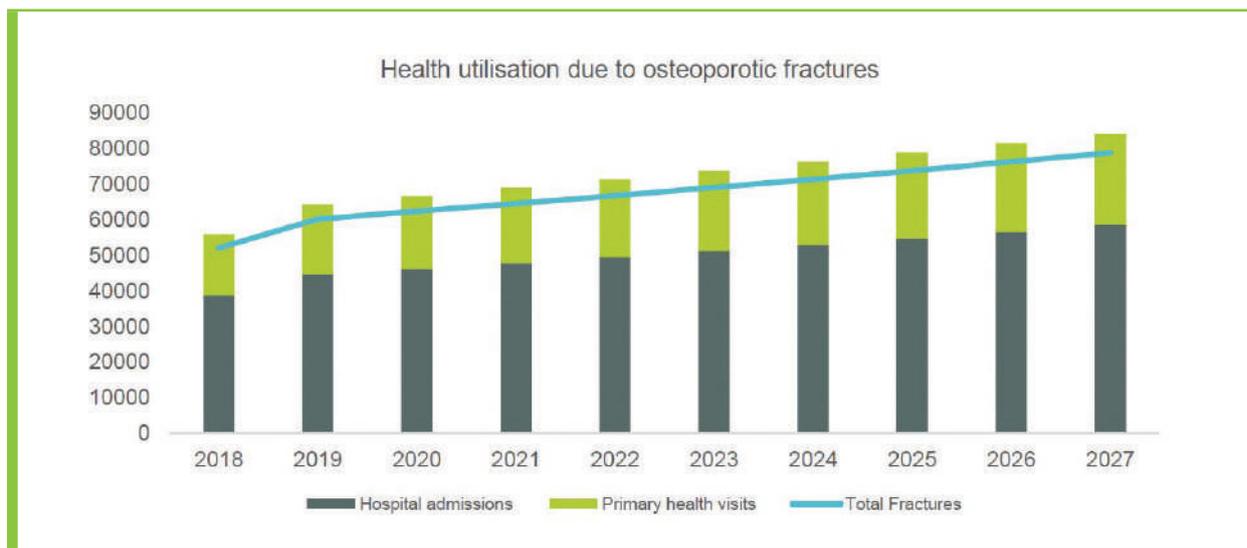
Figure 3: **Prevalence of osteoporosis**³²



The increased number of Australians suffering from weaker bones will lead to a greater number of fragility fractures. Women are three times as likely to suffer a fragility fracture, and men are nearly four times as likely to suffer a fragility fracture if they are over the age of 70 years and have osteoporosis, compared to those of the same age with a normal bone mineral density.³³

Furthermore, as shown seen in *Figure 4*, if nothing changes, health service utilisation in relation to osteoporosis will continue to increase. In 2027, it is estimated that 58,500 hospital admissions and 25,700 GP visits will occur due to osteoporosis which is 1.5 times more than in 2018.³⁴ Investing in solutions that reduce this burden and support system sustainability will be socially and economically valuable now and in the future.

Figure 4: **Health utilisation due to osteoporotic fractures**³²



Call to action

This National Strategic Action Plan for Osteoporosis (the Plan) provides an evidence-based road map to guide national efforts to:

- broaden Australians awareness and understanding on the importance of bone health throughout their life course;
- improve the quality of life and outcomes for Australians living with osteopenia and osteoporosis;
- reduce the incidence of osteoporosis and associated fragility fractures; and
- reduce the impact and cost of osteoporosis to society and the broader Australian healthcare system.

To achieve these objectives, the Plan has identified **three strategic Priorities** with a number of key focus areas and specific actions:

Priority 1: Increase osteoporosis awareness and education with a focus on early prevention

Priority 2: Improve osteoporosis diagnosis, management and care

Priority 3: Establish an Osteoporosis Information Technology Strategy to improve patient outcomes through data collection and monitoring and strategic research

These three Priorities are interconnected and provide a comprehensive approach to achieve our Vision:

Strong Bones for a Life without Fractures

The Priorities and their specific actions have been developed with expertise and input from key stakeholders and further developed by the National Working Committee, representing key stakeholder groups in osteoporosis prevention, diagnosis, management and care and those living with osteoporosis; as well as a broad range of targeted consultations with consumers, clinicians, policy makers and health service providers.

Implementation of this Plan over the next 2–3 years will improve diagnosis, prevention, management and care for people with, or at risk of, osteoporosis.

Priority 1: Increase awareness and education with a focus on early prevention

Australians need to better understand the importance of bone health across their life course and the causes, risk factors and consequences of osteoporosis – that it is not simply part of the ageing process and that it can lead to considerable long-term disability, pain and loss of independence and at significant cost to the broader healthcare system. It can even be fatal. Australians need to have a better understanding of what they can do to improve bone health throughout their lives and what services, information and support they can access when required.

Key focus areas and actions

The **key focus areas** for increasing osteoporosis awareness and education with a focus on early prevention are to:

- 1 Increase community awareness and understanding of the importance of bone health and osteoporosis including its risk factors and prevention.
- 2 Establish systems to deliver online national school education programs on the importance of bone health and early prevention of osteoporosis.
- 3 Improve health professional access to osteoporosis education and resources.

Key focus areas and actions

1 Increase community awareness and understanding of the importance of bone health and osteoporosis including its risk factors and prevention

1 Action	Detail
<p>1.1 Deliver a broad range of targeted national osteoporosis and bone health public awareness campaigns and resources with consistent evidenced-based health messaging</p>	<p>Enable people to minimise the risks for osteoporosis with consistent evidenced-based health messaging on the benefits of good diet with fruit and vegetables, low salt, vitamin D, protein, calcium alcohol reduction, smoking cessation and regular physical exercise and integrating these messages as benefit for other chronic conditions.</p> <p>Health messaging to include addressing the misconceptions around appropriate treatment with pharmaceutical drugs to prevent bone deterioration, or restore bone health, with a balanced approach between effectiveness and safety to support patients in making informed decisions about the use of medication and the impact on their overall health.</p> <p>Education and awareness campaigns should be tailored for specific priority population groups including for the over 50s, Aboriginal and Torres Strait Islander people and people living in rural and remote areas with time taken to work with these groups to investigate and co-design the specific messages required for each group at a local level. Targeted campaigns for older Australian's living with osteoporosis and fractures in different settings including aged care facilities should be focused on maintaining independence.</p> <p>Materials and campaigns need to be developed in a culturally appropriate way for Aboriginal and Torres Strait Islander people with recognition of cultural sensitivities, linguistically diverse backgrounds and literacy levels.</p> <p>The <i>Know Your Bones</i> online tool to become the foundation of risk assessment across all population groups including the general public.</p>

1 Action	Detail
<p>1.2 Enhance and better promote <i>Know Your Bones</i>³⁶ to engage the community to self-risk assess osteoporosis and/or fracture</p>	<p><i>Know Your Bones</i> is a joint Australian translational research initiative for fracture prevention developed by Osteoporosis Australia and Garvan Institute of Medical Research. It is an evidence-based, consumer online health tool to review risk factors for poor bone health by asking users a series of evidence-based questions under 4 broad areas:</p> <ul style="list-style-type: none"> • Medical History (including age, weight, previous fracture, previous falls, gender) • Clinical Risk Factors • Lifestyle Risk Factors • Medication/supplement use <p><i>Know Your Bones</i> identifies bone fracture risk by assessing the user's age, gender, history of fracture, bone mineral density investigation, weight and history of falls. For people aged 50 years and over risk of fracture (over 5 and 10 years) is assessed and reported. The online assessment also investigates clinical and lifestyle risk factors as well as medication use for users of any age. A summary report is provided with personalised recommendations for the online consumer to further discuss with their GP.</p> <p>In late 2018, Osteoporosis Australia produced the first <i>Know Your Bones Community Risk Report</i>³⁷ reviewing de-identified data (self-reported) via the online self-assessment questionnaire. This Report, based on 41,809 completions provides a baseline of results against which future reports can be compared. Findings clearly demonstrate a gap in osteoporosis care in Australia. In particular it shows people who have sustained a 'minimal trauma fracture' are not routinely managed with treatment to reduce fracture risk and others with clinical risk factors are not routinely investigated with a bone density test.</p>
<p>1.3 Include osteoporosis and improving bone health into relevant health care policies, programs and initiatives across State and Federal governments</p>	<p>Update existing or new chronic disease prevention and management policies, frameworks, programs and funding arrangements across all levels of government to explicitly include a focus on improving bone health and osteoporosis. Include osteoporosis health messaging in government-run campaigns and programs promoting physical activity, healthy diets, weight management and smoking cessation.</p> <p>Explicitly address osteoporosis in current government health policies and programs such as the Women's Health Strategy and the Health Care Homes trial.</p>

2 Establish systems to deliver national school online education programs on the importance of bone health and early prevention of osteoporosis

What is the Issue?

Given that 90% of peak bone mass is acquired by age 18 years for girls and by age 20 years for boys, targeting adolescents before and during puberty could have a considerable impact on increasing peak bone mineral mass and maintenance of bone health, potentially delaying the onset of osteoporosis and decreasing the risk of fractures later in life.³⁸

This can include an emphasis on weight-bearing exercise and diet, particularly calcium and protein intake, the need for vitamin D and the avoidance of risky behaviour in smoking and alcohol consumption. Exercise could be integrated with existing education campaigns and programs such as the 'Girls make your move' or 'Sporting Schools'.

There is strong evidence of the success of taking education based approaches in improving health and well-being in school children, with a view to improving outcomes in adulthood.^{39 40} It is recommended that Australia takes an education-based approach to improving the bone health of children with the aim of instilling a range of behaviours that can be independently sustained through puberty and beyond. Targeted National School Education Programs on the importance of having healthy bones will be delivered supporting the current Science and Personal Development and Health curriculum as specified by the National Curriculum in the areas of skeletal science and bone health. Such programs would also be integrated with general health information on the links between risk factors and comorbidities with other chronic conditions.

Ultimately it is proposed to develop an interactive, scientifically accurate web-based bone health education hub housing online modules for secondary teachers, parents and students (from years 7–10) allowing conversations about bone health to extend beyond the classroom and into the home which could have widespread benefits. This hub will provide tools, lesson plans and learning resources to build awareness of the 'need to' and knowledge of 'how to' look after your bones.

By delivering strong evidenced-based messages about good bone health in secondary school children, we envisage improving osteoporosis outcomes in adulthood thereby reducing its' current burden on society and the Australian health care system (refer to *Figure 5*).



Figure 5: **Potential solutions and benefits of national school online education programs**

2 Action	Detail
<p>2.1 Phase 1 Develop and pilot 3–5 interactive bone health education modules for Years 7–8 across six public secondary schools</p>	<p>Determine a National Secondary School Stakeholder Engagement strategy to include the Department of Education and Training (DET), the Board of Studies in each State, the Australian Curriculum Assessment and Reporting Authority (ACARA), the National Catholic Education Commission, the Independent Schools Council of Australia and other professional secondary teaching bodies such as the Australian Science Teachers Association, the Australian Council for Health, Physical Education and Recreation (ACHPER) and the Association of Personal Development and Physical Education Teachers.</p> <p>Identify six public secondary high schools from two States (suggest NSW and SA) to pilot the developed interactive bone health education modules.</p> <p>Osteoporosis Australia to establish and lead a Secondary School Education Advisory Committee to include representatives from identified key stakeholder groups as well as teachers and parents from the six public secondary schools.</p> <p>Determine online technology and tender requirements for website, online module and other resource development that is both Microsoft, Android and Apple compatible.</p> <p>Contract a professional curriculum writer to develop education content in consultation with the Advisory Committee and teachers for the 3–5 bone health modules that are Years 7–8 curriculum compliant ensuring that all Key Learning Areas (KLAs) are covered.</p> <p>Phase 1 pilot to be conducted across the six public high schools over two School Terms to evaluate the online modules including content, ease of use, engagement (teacher, student and parent), classroom interaction and learning outcomes.</p> <p>As a result of Phase 1 evaluation process improvements and amendments implemented to Year 7–8 online bone health modules.</p>
<p>2.2 Phase 2 Develop and pilot 3–5 interactive bone health education modules for Years 9–10 across Phase 1’s identified public secondary high schools</p>	<p>Contract professional curriculum writer to develop education content in consultation with the Advisory Committee and teachers for the 3–5 bone health modules that are Years 9–10 curriculum compliant ensuring that all Key Learning Areas (KLAs) are covered.</p> <p>Phase 2 pilot to be conducted across the same six public secondary high schools over two School Terms to evaluate the online modules including content, ease of use, engagement (teacher, student and parent), classroom interaction and learning outcomes.</p> <p>As a result of the Phase 2 evaluation process improvements and amendments implemented to the Year 9–10 online bone health modules.</p>

2 Action	Detail
<p>2.3 Conduct program evaluation and determine next steps</p>	<p>In consultation with the Secondary School Education Advisory Committee, implementation of the improved Years 7–10 online bone health modules to an additional minimum 35 public secondary schools. Online bone education hub fully live for Years 7–10 secondary teachers, parents and students.</p> <p>An evaluation program to be designed and conducted for the extended cohort of secondary public schools over two School Terms to determine the effectiveness of taking a public secondary education-based approach to improving bone health in children (years 7–10) and recommendations moving forward including next steps for implementation and marketing campaigns nationally.</p>

3 Improve health professional access to osteoporosis education and resources

3 Action	Detail
<p>3.1 Develop and promote access to self-management resources, education and training opportunities for allied health professionals including practice nurses, pharmacists, exercise physiologists and physiotherapists</p>	<p>Develop effective self-management resources for allied health professionals that provide people with osteoporosis with information and skills to enhance their ability to take an active role in their own health care, when appropriate diet, safe and effective exercise and adherence to pharmaceutical treatment if required. Self-management resources should include the ability to access a coordinated network of professionals for further information or treatment.</p> <p>Develop partnerships with relevant allied health professional associations and organisations to promote access to these new resources and education opportunities.</p> <p>In consultation with professional associations and organisations, develop and deliver a national allied health training and education framework available in a variety of formats (e.g. face to face, online and blended learning) to optimise accessibility.</p> <p>Expand evidenced based content on OA health professional online education portal and promote availability and access.</p>
<p>3.2 Enhance GP and PHN access to relevant training and education opportunities and bone health resources</p>	<p>Build on existing partnerships with relevant primary health care colleges and organisation including the RACGP to improve tactics and access to evidenced-based bone health and active self-management online resources including to <i>Know Your Bones</i>.</p> <p>Engage more broadly with national PHNs on osteoporosis education and training opportunities.</p>

Priority 2: Improve diagnosis, management and care

Despite the burden osteoporosis and fractures have on society and cost to our health care system, osteoporosis remains an under-diagnosed and under-treated chronic disease with as many as 80% of patients failing to receive appropriate investigation and treatment after a fracture. It is largely ignored in Australia, both in the primary and secondary care settings. Given the frequency of such fractures and the associated reduced life expectancy and loss of quality of life, there is an urgent need to better identify those with minor trauma fractures (MTFs) and to better assess, treat and manage people with osteoporosis.

Key focus areas and actions

The **key focus areas** for improving osteoporosis diagnosis, management and care are to:

- 1 Enhance and expand prevention of secondary fracture by integrating a best practice Fracture Liaison Service (FLS) model of care across the majority of hospitals in Australia.
- 2 Establish and pilot an integrated national approach for secondary fracture prevention with primary care.
- 3 Establish and pilot a National Osteoporosis Risk and Identification Program targeting Australians over 70 years old.

Key focus areas and actions

1 Enhance and expand secondary fracture prevention by integrating a best practice Fracture Liaison Service (FLS) model of care across the majority of public hospitals in Australia

What is the Issue?

Secondary fracture prevention is aimed at treating high-risk individuals who have already suffered an osteoporotic fracture. Currently the numbers of patients who have suffered an osteoporotic fracture who subsequently receive treatment is very low with fewer than 30% of women, and 20% of men, receiving treatment after suffering an osteoporotic fracture.⁴¹

A significant proportion of MTFs could be avoided through appropriate osteoporosis diagnosis and management for people who have had a fragility fracture. The strongest and clinically most relevant predictor of a future fragility fracture is a previous fracture. About 50% of those who suffer a hip fracture had a previous fragility fracture and in general, a prior fragility fracture increases the risk of future fracture by at least two to three fold.⁴²

Secondary Fracture Prevention (SFP) programs may take a number of forms. One effective model is the use of Fracture Liaison Services (FLS) which have been demonstrated to improve the number of patients receiving treatment after fracture and reduce the likelihood of subsequent fracture. The crucial elements of a FLS is to:⁴³

- identify fracture patients (identification);
- conduct investigations to diagnose osteoporosis (investigation);
- assess future fracture risk (assessment); and
- where appropriate, to initiate treatment (treatment).

The FLS is a multidisciplinary team including specialists, nurses, and physiotherapists. The FLS coordinator is the key coordinator who facilitates the identification and investigation of patients. There are four possible models of care for FLSs based on the levels of service and intervention provided:⁴⁴

Type A – service identifies patients with MTF, investigates and initiates treatment and a management plan, provides education to patients and communicates with other stakeholders

Type B – service identifies and investigates patients but refers patient back to the GP with recommendations for management and treatment initiation

Type C – service identifies patients at risk and informs them and their GP who undertakes any assessment or treatment of patients

Type D – service identifies at-risk patients and informs and educates only with no communication with GPs

The effectiveness and impact of hospital-based FLSs across Australia and internationally including New Zealand, Europe and North America has been well documented.^{45 46 47 48} National experts in musculoskeletal health have invested considerably in establishing secondary fracture prevention services in Australia. However, at the time of writing this Plan there were only around 32 FLSs established nationally (24 based in hospitals in NSW) out of a potential 1300 hospitals across Australia.

Drawing on this evidence and recent key findings from an Australian study,⁴⁹ it is recommended to immediately enhance the quality and number of **Type A** FLSs in line with the International Osteoporosis Foundations (IOF)'s Best Practice Framework⁵⁰ and 13 global standards of care across Australia to **100 metropolitan, regional and semi-rural hospital sites over the next 2–3 years** (refer to *Figure 6*).

This will ensure best patient outcomes for the prevention of secondary fractures due to osteoporosis and to increase the capture of MTFs to 80% from its' current baseline of 20–50% with potential cost savings to the Australian health care system of around \$240–360 million as a result of 20,000–30,000 fractures being averted.⁵¹

International Osteoporosis Foundation (IOF)'s 13 global best practice standards of care are:⁵²

Patient identification: MTF patients within the scope of the institution (inpatient and/ or outpatient facility or health-care system) are identified to enable delivery of secondary fracture prevention.

Patient evaluation: identified MTF patients within the scope of the institution are assessed for future fracture risk.

Post fracture assessment timing: post-fracture assessment for secondary fracture prevention is conducted in a timely fashion after fracture presentation.

Vertebral fracture: an institution has a system whereby patients with previously unrecognized vertebral fractures are identified and undergo secondary fracture prevention evaluation.

Assessment guidelines: the institution's secondary fracture prevention assessment to determine the need for intervention, is consistent with local/ regional/national guidelines.

Secondary causes of osteoporosis: an institution can demonstrate what proportion of patients who require treatment for prevention of secondary fractures undergo further investigation (typically blood testing to assess for underlying causes of low BMD).

Falls prevention: patients presenting with a MTF, and who are perceived to be at risk of further falls, are evaluated to determine whether or not falls prevention intervention services are needed, and if so are subsequently referred to an established falls prevention service.

Multifaceted health and lifestyle risk-factor assessment: patients presenting with MTFs undergo a multifaceted risk-factor assessment as a preventative measure to identify any health and/or lifestyle changes that, if implemented, will reduce future fracture risk, and those patients in need are subsequently referred to the appropriate multidisciplinary practitioner for further evaluation and treatment.

Medication initiation: all MTF patients over 50 years, not on treatment at the time of fracture presentation, are initiated or are referred to their primary care physician/provider for initiation, where required, on osteoporosis treatment in accordance with evidence-based local/regional/national guidelines.

Medication review: for patients already receiving osteoporosis medications when they present with a fracture, reassessment is offered which includes review of medication compliance, consideration of alternative osteoporosis medications and optimization of non-pharmacological interventions.

Communication strategy: an institution's FLS management plan is communicated to primary – and secondary – care clinicians and contains information required by and approved by local stakeholders.

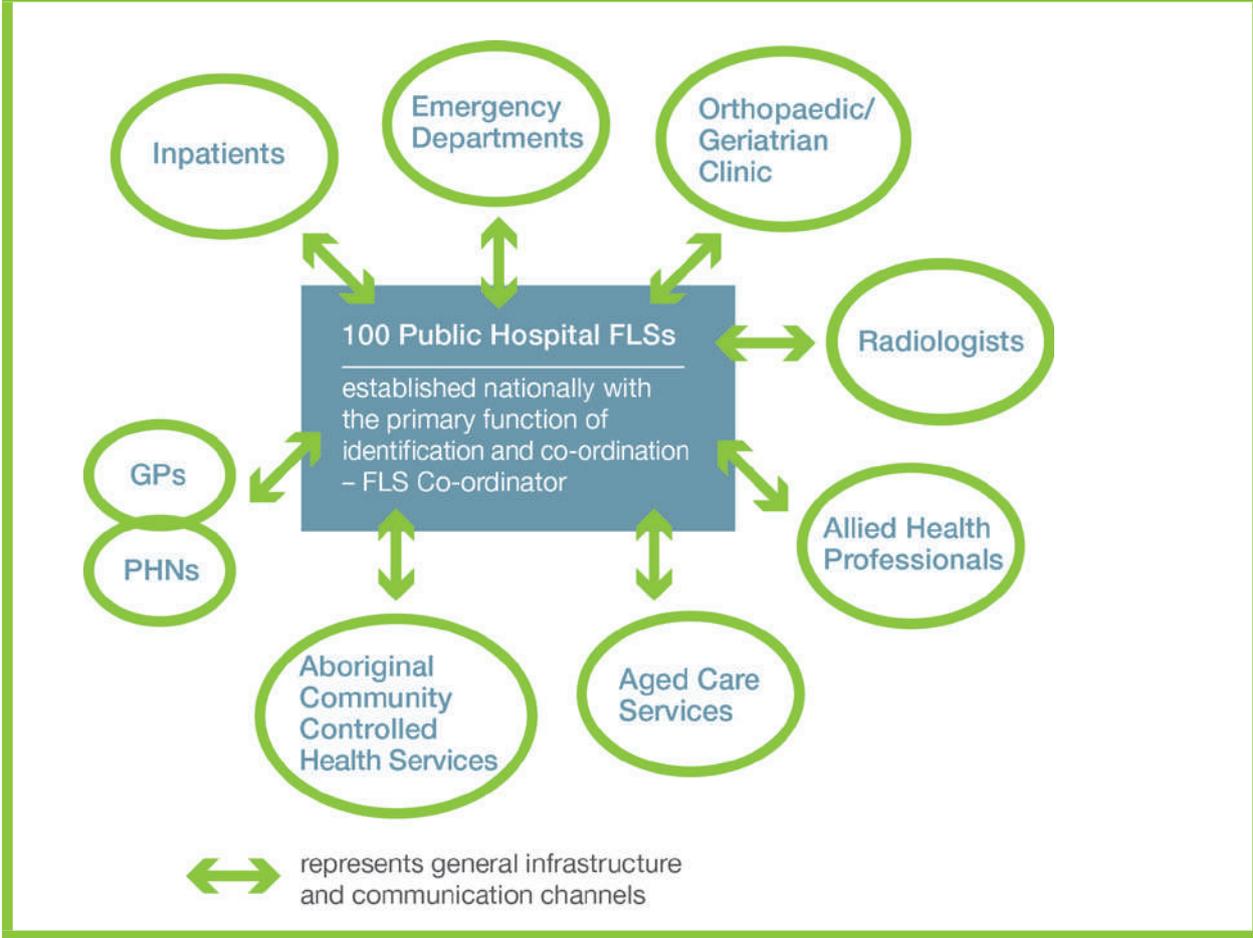
Long-term management: an institution has a protocol in place for long-term follow up of evidence-based initial interventions and a long-term adherence plan.

Database: all identified MTF patients are recorded in a database which feeds into a central national database.

1 Action	Detail
<p>1.1 In partnership with healthcare system stakeholders, OA to lead the implementation of 100 public hospital integrated FLSs across Australia</p>	<p>Identify and engage key health care system stakeholders for the national implementation of 100 public hospitals for integration with a FLS.</p>
	<p>OA to lead the establishment of an Implementation Committee providing expertise and authority to guide local health services in integrating 100 hospital-based FLS services. The responsibilities of the Committee include:</p> <ul style="list-style-type: none"> • leadership, governance and oversight for the roll-out of the integrated FLSs; • development of agreed selection criteria and processes for identifying public metropolitan, regional and semi-rural hospital sites for integration with a FLS. • leadership and guidance to new and established secondary fracture prevention programs.
	<p>A key priority for the Committee is the development of a set of National FLS Minimum Standards for the 100 FLSs to guide the implementation and measurement of best practice, and promote consistency across services nationally. Although the specific FLS model for each of the 100 sites may vary depending on local needs and resources, they must be based around the four key elements: identification, investigation, informing and intervention.</p>
	<p>Recommended enhancements and improvements for the current and new 100 FLSs that must be reflected in the developed National FLS Minimum Standards include:⁵³</p> <ul style="list-style-type: none"> • improving identification by developing and integrating of appropriate coding and technology to better identify MTFs at Emergency Departments; • patients referred to the FLS for investigation to include DXA BMD; absolute fracture risk will be estimated using either FRAX or the Garvan Fracture Risk Calculator (<i>Know Your Bones</i>); additional radiography; performance of baseline biochemistry and where needed performance of falls risk assessment; • appointing an FLS Coordinator to each site to be at least two full days per week or as appropriate for the workload of level of the public hospital; • interventions to be offered as part of FLS include physiotherapy and fall prevention programs, occupational therapy, dietary advice and pharmacotherapy; • development of communication and referral protocols for an efficient distribution of MTF patients from the ED to orthopaedic outpatient clinics and inpatient clinics for better initial investigation and management of osteoporosis • allocation of a Nurse Coordinator at each site to work with orthopaedic surgeons, geriatricians and other allied health professionals to assist with identification of MTF cases • allowance from local hospital authorities is required to initiate MTFs patients on appropriate pharmaceutical treatments within the hospital setting to reduce the chance of non-treatment • development of protocols for follow-up letters to be provided for local GPs by the FLSs as their role is critical for ongoing management and ongoing review of identified MTF patients; and • better engagement of local PHNs to better educate GPs on relevant Bone Health awareness and role of hospital FLSs is critical.

1 Action	Detail
<p>1.2 Establish 100 best practice integrated public hospital FLSs nationally</p>	<p>With guidance from the Implementation Committee each of the 100 (current and new) hospital sites to establish local hospital-based implementation teams to include representatives from the community and primary care sectors including linking with local GPs, aged care services, radiology and Aboriginal Community Controlled Health Care Service (ACCHCS) to co-design an integrated approach in establishing and implementing a best practice hospital site FLS meeting local needs and resources.</p>
<p>1.3 Establish local data collection, monitoring and reporting systems including a national registry</p>	<p>Develop and implement ongoing FLS data collection and monitoring systems of patient outcomes via appropriate technology at local hospital ED and outpatient clinics.</p> <p>Establishment of a National Secondary Fracture Prevention Registry would support the application of the National FLS Minimum Standards and provide a central location outcome data. The Implementation Advisory Committee would endorse agreed processes and minimum reporting requirements for sites to provide to the Registry. Data collected and entered into this Registry could be further utilised to enable ongoing development and continuous improvement of these services.</p>
<p>1.4 Develop and deliver FLS (and secondary fracture prevention) education and communication strategies</p>	<p>Development of communication and education strategies supported by local LHDs and PHNs will help raise awareness around the value and need for secondary fracture prevention. Local FLSs will provide agreed messaging for health professionals and at-risk populations with strategies to specifically target:</p> <ul style="list-style-type: none"> • patients to support literacy and participation (e.g. <i>Know Your Bones</i>); • GPs and allied health professionals to support ongoing management of osteoporosis; and • Aged care facilities and clinicians to consider BMD scanning for people residing in aged care. <p>Establishment of a National Secondary Fracture Prevention Registry would support the application of the National FLS Minimum Standards and provide a central location outcome data. The Implementation Advisory Committee would endorse agreed processes and minimum reporting requirements for sites to provide to the Registry. Data collected and entered into this Registry could be further utilised to enable ongoing development and continuous improvement of these services.</p>

Figure 6: An overview of a public hospital integrated FLS best practice model of care



2 Establish and pilot an integrated national approach to secondary fracture prevention with primary care

What is the Issue?

Almost all secondary fracture prevention programs in Australia are based in hospitals. However, it is estimated that approximately 60,000 fragility fractures per year do not present to hospitals limiting the number of people in the community who the hospital-based team can capture.⁵⁴ However, this figure could be a significant underestimate if we account for ongoing under diagnosis of spinal fractures in both hospitals and in primary care.

GPs play critical role in successful fracture prevention programs to reduce fracture and hospital re-admissions. As central primary care providers, GPs should manage osteoporosis with ability to diagnose and treat patients with fragility fracture. They will improve the identification, diagnosis and management of patients with previous osteoporotic fractures. They will also follow up on patients discharged from hospital-based FLSs ensuring compliance with management strategies.

Primary care and community-based secondary fracture prevention would play an important role in identifying and managing people with fragility fractures in addition to the support of follow up of people discharged from hospitals.

It is **recommended that an integrated approach to secondary fracture prevention with primary care be piloted by incorporating the role of an FLS in GP practices** (refer to *Figure 7*). This Australian pilot will become the benchmark in behavioural change for taking a proactive approach for early identification and prevention.

2 Action	Detail
<p>2.1 In partnership with health care system, OA to establish an Integrated FLS Primary Care Advisory Committee</p>	<p>The Integrated FLS Primary Care Advisory Committee will provide ongoing leadership, governance and expertise with its' responsibilities including:</p> <ul style="list-style-type: none"> • endorsing a protocol for engaging and communicating with 200 GP practices; • engaging support from relevant PHNs to promote co-operation, sharing of information and best practices, educational support for GPs in area of bone health and potential support from local hospital FLSs infrastructure; • endorsing processes and guidelines (the Protocol) for establishing the role of FLS in the 200 GP practices including allocation of trained FLSs nursing personnel to practices to identify local cohorts of patients 65 years and over for bone health assessment; and • identify future improvement options and recommendations for this national approach to secondary fracture prevention moving forward.
<p>2.2 Establish effective GP practice electronic decision support platforms</p>	<p>Development, or enhancement of, existing electronic decision support (CDM management) platforms to register, assesses and guide GPs management options for people at risk of secondary fracture due to osteoporosis.</p> <p>The system will need to identify patients at risk and provide appropriate personalised GP management plans in line with current evidence including National RACGP Clinical Guidelines⁵⁵ and with risk stratification agreed to by the patient and GP allowing for long term monitoring of outcomes.</p>

2 Action	Detail
<p>2.3 Integration of FLSs into selected GP practices to conduct local patient assessments</p>	<p>The 200 GP practice integrated FLSs will be required to:</p> <ul style="list-style-type: none"> • identify appropriate local cohorts of patients at risk or with fragility fracture; • coordinate an integrated team approach (including practice staff, GP, local PHN, diagnostic providers) to assess the patients in line with current evidence including RACGP Clinical Guidelines and support the process of patient assessment at GP practices; • integrate with and/or establishing required complimentary services, including fall prevention and life style education; and • integrate and co-ordinate required patient care with allied health professional.
<p>2.4 Conduct an evaluation of this integrated approach to secondary fracture prevention with primary care pilot</p>	<p>Evaluation program to be designed and conducted by an expert team against patient outcome and process and technology parameters to determine impact, recommendations and next steps.</p>

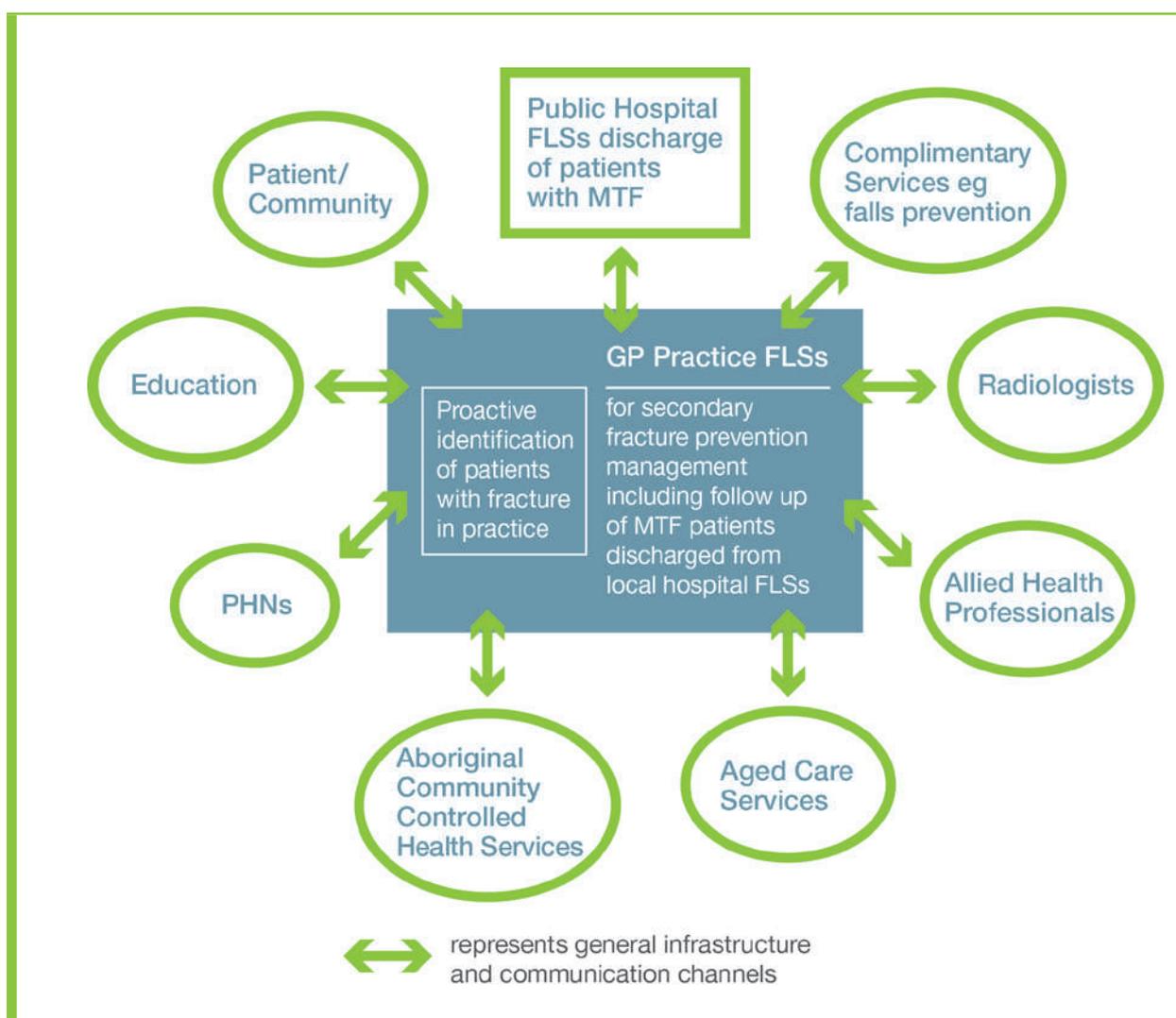


Figure 7: **Proposed integrated approach to secondary fracture prevention with primary care**

3 Establish and pilot the *National Osteoporosis Risk and Identification Program* targeting Australians over 70 years old

What is the Issue?

The Australian public and, in particular, older Australians would benefit from a nationally coordinated approach to increase osteoporosis awareness and diagnosis. Although diagnostic and management services are already funded under the Medical Benefits Schedule (MBS) and Pharmaceutical Benefits Schedule (PBS) for at-risk individuals, there is a relatively poor uptake in eligible populations.⁵⁶ Hence a program to increase osteoporosis awareness and diagnosis would support people to access the services and care for which they are entitled. A result of this approach will be a reduction in the number of costly fragility fractures, and improvements in health outcomes for those people living with osteoporosis.

The National Osteoporosis Risk and Identification Program (the Program) is aligned to the *National Strategic Framework for Chronic Conditions*⁵⁷ with the opportunity to take action in promoting early detection, appropriate chronic disease management and, improving health outcomes related to osteoporosis. It will lead to an increased utilisation of BMD scanning of the 70-year-old and over population with an estimated additional 750,000 BMD scans conducted yearly once the program has been rolled out.⁵⁸

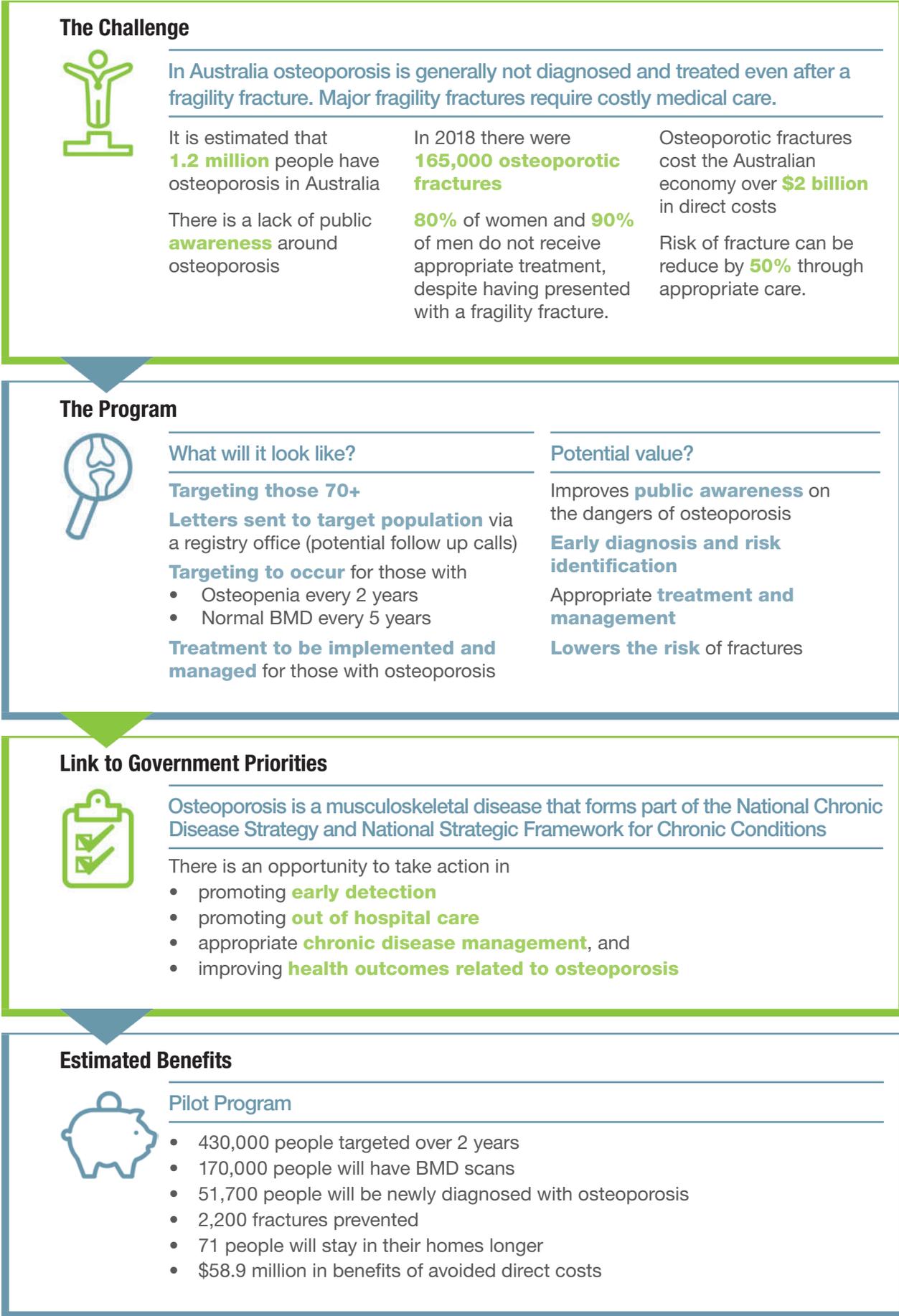
The increased risk identification and awareness will also result in approximately 224,000 people being diagnosed and treated for osteoporosis yearly and an estimated 10,000 fractures being avoided yearly by the patient cohorts involved in the Program. Avoided fractures will also lead to more than 3000 older Australians staying in their own homes longer due to avoided fractures every year once the program is rolled out across Australia.⁵⁹

This National Program is designed to focus on identifying those with osteopenia and osteoporosis early to reduce their risk of fracture and envisioned to include the following (refer to *Figure 8*):

- 1 Letters sent to men and women aged 70 years or older to:
 - explain in simple terms the risk of osteoporosis, the benefits of appropriate diagnosis and subsidised services currently available to reduce the risk of osteoporosis
 - encourage recipients to discuss the issue with their GP. The letter acts as a referral for radiology services so that people can access BMD services directly and subsequently visit their GP to discuss the results, and, if appropriate, a relevant course of action for treatment;
- 2 Campaigns to raise awareness around osteoporosis and the Program, and
- 3 A registry to track activities (including information flow) and participation.

Before a national roll out of the National Osteoporosis Risk and Identification Program commences, **a two year pilot is recommended to test the impact the Program including uptake, diagnosis and treatment rates** (refer to *Figure 9*).

Figure 8: National Osteoporosis Risk Identification and Awareness Program



3 Action	Detail
<p>3.1 In partnership with health care system stakeholders, OA to establish a National Pilot Program Steering Committee</p>	<p>The National Pilot Program Steering Committee would provide the leadership, expertise and authority to oversee the development and implementation of the Pilot program including:</p> <ul style="list-style-type: none"> • identification of three PHNs to be actively targeted with up to 430,000 people over 70 targeted as well as identification of three additional PHNs to act as the control group, • establishment of a central registry office, and • development of referral letter of invitation to participants. <p>The six sites will include two metropolitan, two regional and two rural PHN regions. The Pilot Program will test participation and uptake based on people targeted who will subsequently:</p> <ul style="list-style-type: none"> • have a BMD scan; • receive their diagnosis; and • if osteoporotic, progress to appropriate treatment and management. <p>Participation will be tracked with informed consent by a Central Registry Office.</p>
<p>3.2 Establishment of a Central Registry Office to track implementation activities including information flow and registration</p>	<p>The Central Registry Office would be authorised to access MBS and PBS data and implement the Program across the pilot sites. Responsibilities of the registry office will include:</p> <ul style="list-style-type: none"> • identifying the target population and postal addresses using Medicare information; • sending a letter of invitation to potential participants. This letter will include information on the burden of osteoporosis (for discussion with GP) and a referral for a BMD scan; • data collection and entry into the registry for monitoring and analysis of outcomes; • liaising with site teams on local campaigns and considerations; and • identifying areas for future improvement and options to increase effectiveness and efficiencies nationally.
<p>3.3 Deliver local campaigns to help raise awareness around osteoporosis and the pilot program</p>	<p>Local campaigns in the six pilot locations would help raise awareness, explain the program and support uptake. Various organisations could support this including the Australian Medical Association (AMA), OA, PHNs, and the RACGP. The campaigns will support uptake by targeting:</p> <ul style="list-style-type: none"> • local at-risk individuals to increase their awareness of the risks of osteoporosis and value of participating; and • GPs to support uptake and assist with on-going management of osteoporosis for older people who often have co-morbidities and complex care needs, improve adherence to treatment and address any concerns on safety of treatment.

3 Action	Detail
3.4 Establish effective monitoring and reporting processes	Monitoring and analysis would be conducted by the central registry across the six pilot sites to assess participation. Analysis to be conducted through monitoring: <ul style="list-style-type: none"> • utilisation of MBS codes for dual-energy X-ray (DXA) scanning by gender, age sub-cohort and region; and • osteoporosis medication being prescribed under PBS during the two-year pilot, and analysis of uptake and adherence.
3.5 Conduct an evaluation of the Pilot program	An evaluation of the Pilot program will be conducted by an expert team to determine impact and lessons learned from the pilot sites that will aid the national roll out of the Program.

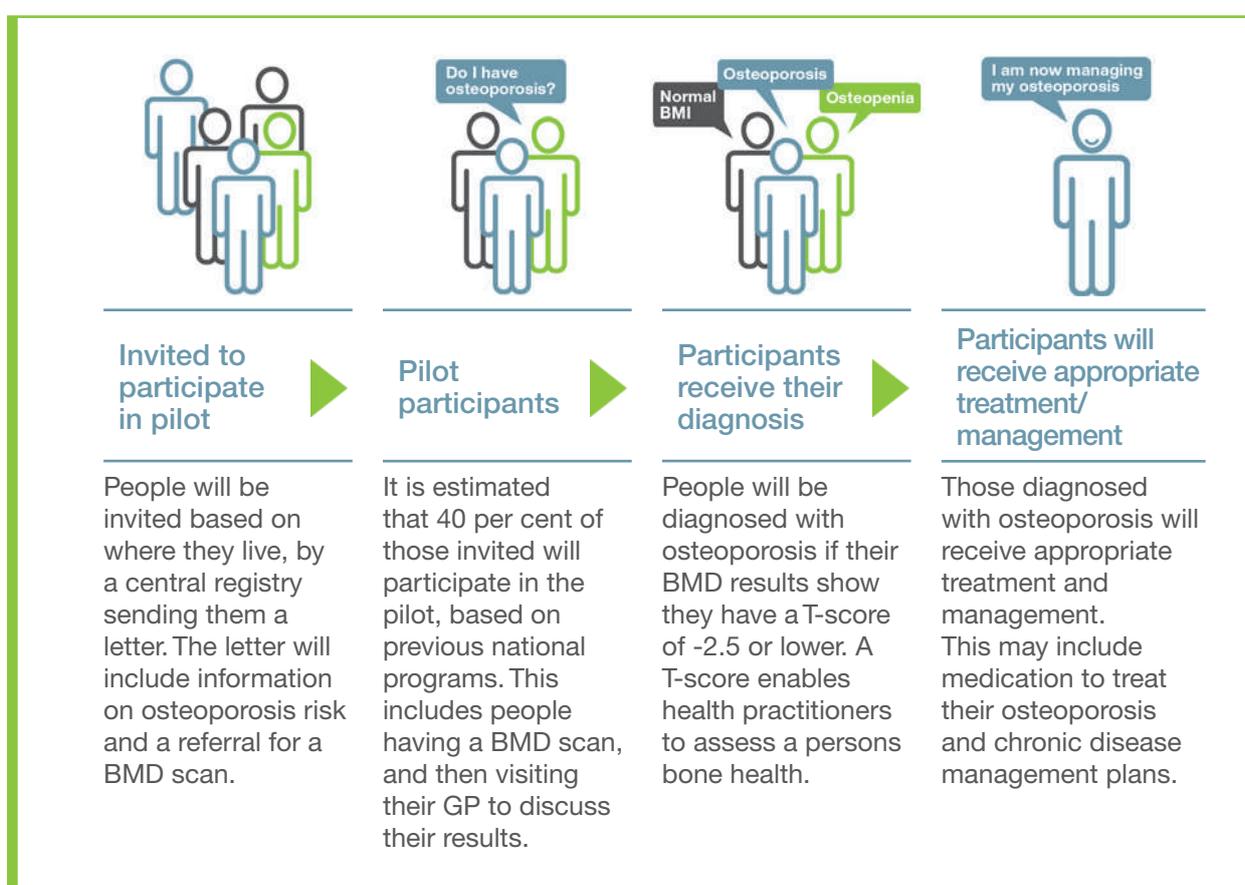


Figure 9: **Proposed pilot pathway to test the impact of the National Osteoporosis Risk and Identification Program**

Priority 3:

Establish an Osteoporosis Information Technology Strategy to improve patient outcomes through data collection and monitoring and strategic research

Information technology is a critical enabler in providing clinical decision support for GPs, specialists and patients. Quality outcomes data collection and monitoring is essential for translational research purposes, driving ongoing improvements and effective stakeholder collaboration in the area of chronic disease management including osteoporosis.

Key focus areas and actions

The **key focus areas** for improving patient outcomes through information technology, data monitoring and strategic research are:

- 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.
- 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.
- 3 Drive strategic priority research supporting translation and implementation research to improve patient care and outcomes.

Key focus areas and actions

- 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 Action	Detail
1.1 Assess the validity and value of existing algorithms(e.g. FRAX, Garvan Risk Calculator) for clinical platforms to provide a risk calculation of osteoporosis and fracture	Scope technical requirements for the development of a new clinical platform and/or for enhancement of existing IT capabilities to provide a risk calculation of osteoporosis and fracture and personalised recommendations for patient management to be used in both primary care and/or hospital settings.
1.2 Integrate algorithms and recommendations with risk assessment for clinical platforms that is an innovative easy tool for clinicians to enhance patient care	Scope and develop technical requirements for the integration of clinical algorithms and recommendations into clinical platforms that will provide innovative easy tools for clinicians to enhance patient care.

1 Action	Detail
1.3 Identify critical parameters for monitoring of collected data to enable generation of clinical reports and epidemiological data on patient outcomes for use by key health system stakeholders	Develop a set of clinical reports that can be generated automatically to record critical outcomes for osteoporosis and fracture for individual patients and patient cohorts in line with best practice clinical guidelines.
	Develop set of national benchmarks (health informatics) to understand best practice management and impact.
1.4 Enhance community and patient engagement for osteoporosis management and care by developing mobile interoperable applications (with clinical platforms)	Explore and develop digital enabled strategies for the development of mobile interoperable applications (with clinical platform) to collect data for clinical assessment outcomes and allow for feedback on individual patient plans and actions related to the osteoporosis management including treatments.

2 Develop data collection processes and technical capabilities to integrate a clinical platform with existing EMR systems in hospitals and primary care

2 Action	Detail
2.1 Explore digitally enabled strategies to enhance data collection by automated data capture from key EMR systems in hospital and primary care settings	Engage with key EMR providers (nationally for primary care and state-wide for public hospitals) to explore digitally enabled strategies for integration of a clinical platform with EMR systems.
	Scope technical requirements and capabilities for automated data capture and transfer of relevant parameters.
2.2 Develop capability to link relevant clinical data from existing patient registries and key health record database	Engage with MyHealth Record and existing patient registries (e.g. ANZ Hip Fracture Registry) to explore strategies for clinical data integration.
	Scope technical requirements and capabilities to achieve this clinical data integration.

3 Drive strategic priority research supporting translation and implementation research to improve patient care and outcomes

3 Action	Detail
3.1 Fund and commission high quality translation and implementation research projects that will lead to improved prevention, diagnosis, management and care in the area of osteoporosis and fracture prevention	Explore and identify new opportunities from the MRFF, NHMRC and other relevant organisations to increase investment into strategic priority driven research for osteoporosis and fracture prevention.
	Build national collaborative interdisciplinary research partnerships between Universities, health services, consumers and at risk population groups and the broader research sector.

Next steps

Further work is required to operationalise each of the three Priorities and key focus areas as described in this National Strategic Action Plan. It is proposed that an Implementation Steering Group led by OA is established to drive, prioritise and oversee the implementation for the priority focus areas as detailed in this Plan as well ensuring appropriate resource allocation.

In addition, specific priority action working groups will be established to identify relevant implementation partners and develop individual implementation plans including key performance indicators for monitoring and assessing progress.

Overall progress in implementing the National Strategic Action Plan will be reviewed on an annual basis.

Partnerships

Identifying and establishing relevant partnerships and collaborations is essential to implement the priority focus areas and will vary according to the actions to be addressed and will include:

- People living with osteoporosis, their families, carers and consumer groups
- Federal and State and Territory Governments, Departments of Health and Ageing agencies such as the Australian Institute of Health and Welfare and the Australian Commission of Safety and Quality in Health Care
- Public hospitals
- Primary care structures and clinics including GP networks and practices
- Health organisations including PHNs, LHDs, NPS MedicineWise
- Osteoporosis clinical networks including OA Scientific and Medical Committees
- NSW Agency for Clinical Innovation
- Clinicians and health professional colleges (in particular RACGP), RACP specialty societies, peak bodies and associations
- Aboriginal Community Controlled Health Organisations
- Representatives of culturally and linguistically diverse groups
- Rural health organisations
- Industry including health insurance providers, pharmaceutical and devices industry
- Universities, institutes (in particular the Garvan Medical Institute), alliances (in particular SOS Fracture Alliance) and other relevant research groups
- Public secondary high schools, relevant educational organisations and associated peak bodies
- Aged care providers and facilities
- Media and marketing agencies and digital product developers.

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