Osteoporosis Australia
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19 December 2018

The Hon Greg Hunt MP
Minister for Health
Parliament House
Canberra ACT 2600

Via e-mail: nick.henry@health.gov.au; sam.develin@health.gov.au

Dear Minister Hunt

2019-20 FEDERAL PRE-BUDGET SUBMISSION: NATIONAL OSTEOPOROSIS RISK IDENTIFICATION AND AWARENESS PROGRAM

Thank you for your support for the **National Osteoporosis Strategic Plan**, announced at the launch of the *Know Your Bones' Community Risk Report* in Parliament House on 18 October 2018. We sincerely appreciate your ongoing support and welcome the opportunity to continue our work with you on tackling this chronic disease.

We are pleased to enclose a 2019-20 Pre-Budget submission for your consideration, entitled the **National Osteoporosis Risk Identification and Awareness Program** (the Program). This Federal funding submission for $4.5 million will save the Morrison Government **$58.9m** over two years and complements the National Secondary Fracture Prevention Program (NSFPP) Budget submission that we lodged first in December 2017, and then again in June 2018. This new Program also supports the health and ageing sectors through its alignment with the **National Strategic Framework for Chronic Conditions** and will assist the Morrison Government diagnose and treat up to 51,000 senior Australians for osteoporosis and prevent up to 2,100 osteoporotic fractures.

May we also congratulate your MYEFO announcement on 17 December 2018 for $500 million to boost Primary Care in 2018-19, $318 million of which will directly benefit GPs in their important role keeping people healthy and out of hospital, and in managing what can be challenging chronic conditions for patients. May we take this opportunity to highlight the strong synergies between your Primary Care announcement and both this Pre-Budget submission and our original NSFPP Budget submission. One of the central pillars of both submissions is the focus on benefits for all with a strong emphasis on empowering GPs to further develop and continue their important role in promoting good bone health and preventing the chronic disease of osteoporosis and its associated secondary fractures.

It is important that individuals who are at risk of osteoporosis have an awareness of appropriate pathways for which they are eligible to promote better health and reduce the impact that osteoporosis places on individuals and the wider community. We have been developing a National Osteoporosis Risk Identification and Awareness Program (the Program) to further support early action and early diagnosis of osteoporosis in Australia.

The Program will increase the risk identification, awareness and earlier treatment of osteoporosis nationally. It has been envisioned to include the following:

- 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 services currently available to reduce its risk

- The letter acts as a referral for radiology services and a follow up visit to their GP to discuss results. If appropriate, relevant treatment would commence
- Campaigns to raise public awareness around osteoporosis and bone health and the Program
- A registry to track bone health activities and participation

To implement the abovementioned Program, Federal funding of $4.5 million in the 2019-20 financial year would be required to roll-out a two-year pilot of the Program to test uptake, diagnosis, treatment rates and impact prior to subsequent national roll out. Over the two-year pilot, it is estimated that over ***51,000 senior Australians will be newly diagnosed and treated for osteoporosis and 2,200 osteoporotic fractures will be avoided,*** leading to an estimated benefit of ***$58.9m***. Avoided fractures would also lead to an estimated 4,950 quality adjusted life years (QALYs) being saved, at an additional **societal value of $206 million**.[1]

The recommendation of this Program signals an opportunity to take action that strategically aligns to several existing policies and frameworks, including the *National Strategic Framework for Chronic Conditions* and the recently announced *National Osteoporosis Strategic Plan*.

Thank you in advance for considering our submission. If you have any questions or require any further information, please do not hesitate to contact me via e-mail at greg@osteoporosis.org.au or mobile, 0466 117 245.

Yours sincerely

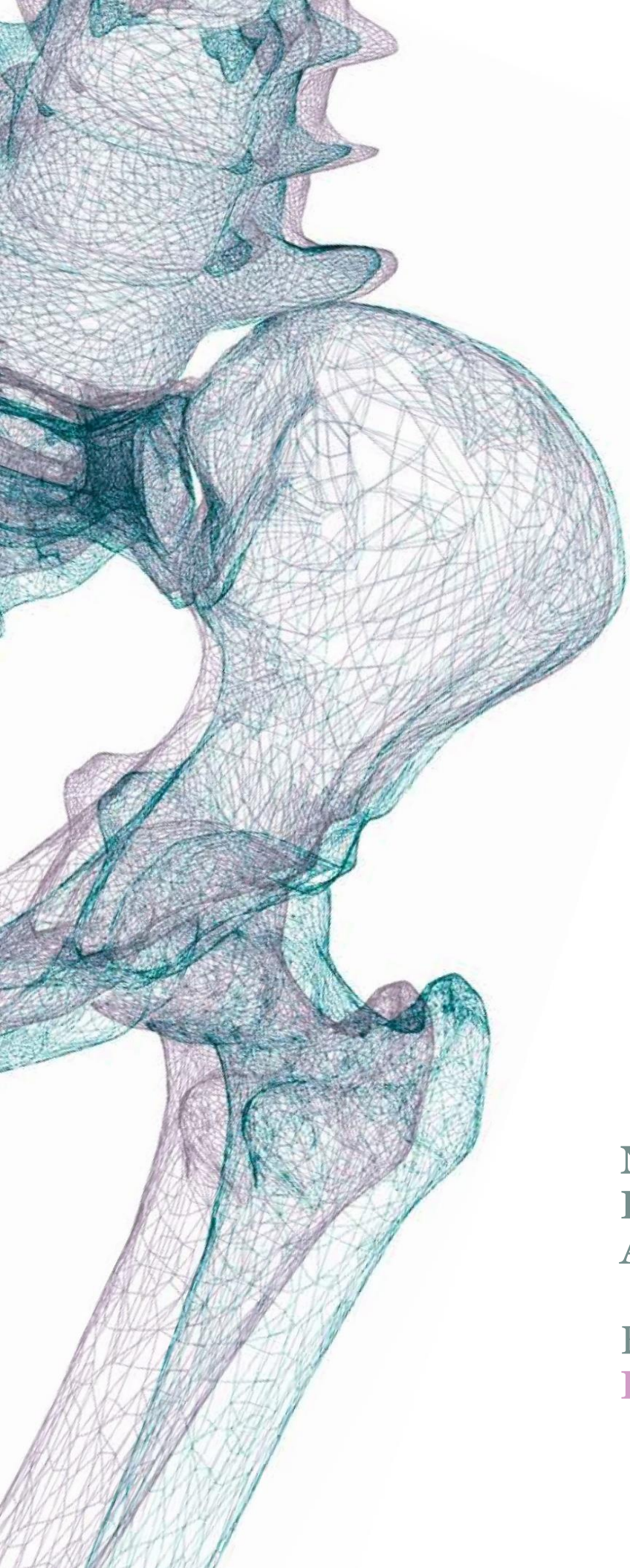
Greg Lyubomirsky

Chief Executive Officer

Osteoporosis Australia

CC: *The Hon Ken Wyatt AM MP, Minister for Indigenous Health, Minister for Senior Australians and Aged Care via Ms Paula Gelo, Senior Adviser, at paula.gelo@health.gov.au*

[1] Value of a QALY is estimated to be $42,000, based on Huang, I., Frijters, P., Dalziel, K. and Clarke, P. (2018). Life satisfaction, QALYs, and the monetary value of health. *Social Science & Medicine*, 211, pp.131-136.



National Osteoporosis Risk Identification and Awareness Program

Budget submission

December 2018

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Executive summary

There is an opportunity to reduce fragility fractures in Australia through better identification and management of osteoporosis risk within the community. 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.[1] It is important that individuals who are at risk of osteoporosis have an awareness of appropriate pathways for which they are eligible; this presents an important opportunity to promote better health and reduce the impact that osteoporosis places on individuals and the wider community.

This submission outlines a proposal to increase uptake of subsidised diagnosis and hence reduce costly fragility fractures.

This submission is aligned to the **National Osteoporosis Strategic Plan** and the vision of the recently released **National Strategic Framework for Chronic Conditions** *('All Australians live healthier lives through effective prevention and management of chronic conditions*'), and embodies the key objectives and guiding principles set out in that document, including encouraging active engagement and timely and appropriate detection and intervention.[2] The recommendation of a National Osteoporosis Risk Identification and Awareness Program signals an opportunity to take action aligned to the National Strategic Framework for Chronic Condition's intent.

The issue – osteoporosis diagnosis and treatment is low in Australia

Osteoporosis is a chronic disease that leads to an increased risk of fragility fractures. The prevalence of osteoporosis and fragility fractures increases with age, and it is estimated that more than 80 per cent of the Australian population over the age of 70 have osteoporosis or osteopenia (i.e. reduced bone mineral density, placing them at a heightened risk of fracture).[3] The heightened risk of fractures lead to an estimated 166,000 fragility fractures in older Australians in 2018.[4]

A fragility fracture occurs when a minimal trauma event[i] results in a broken bone. The human body should be able to withstand a minimal trauma incident such as a fall, however those suffering osteoporosis are much more likely to suffer a fragility fracture due to their weaker bones. Compared to those with a normal bone mineral density, 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 and have osteoporosis.[5]

Fragility fractures significantly impact older people and their quality of life and ability to remain independent. Major fragility fractures, such as hip and spine fractures, can cause disability, institutionalisation and death. Many osteoporotic fractures require costly medical care, including emergency assistance, surgery, hospital stays, rehabilitation and community services (such as home care). It is estimated that osteoporotic fractures cost the Australian economy over $2 billion in direct health costs (including hospitalisations and general practitioner (GP) visits) in 2016.[6]

Many fragility fractures could be prevented through early diagnosis and appropriate care within current health system mechanisms, such as chronic disease management plans, allied health arrangements, and specific osteoporosis pharmacotherapy. In 2018, more than 1.2 million Australians are estimated to have osteoporosis and approximately 800,000 of those are over the age of 70 years.[7] However many people are undiagnosed and do not receive appropriate treatment, even after one or more fractures have occurred. Up to 80 per cent of post-menopausal women, and 90 per cent of men, are not receiving appropriate treatment, even after a fracture.[8] Furthermore, it is estimated that less than ten per cent of people over the age of 70 accessed subsidised diagnostic services (such as bone mineral density (BMD) scanning) for osteoporosis in 2017.[9]

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 system, and a lack of focus on osteoporosis compared to other chronic diseases.

[i] A minimal trauma event is a low impact event such as a fall from a person's standing height or lower.

The recommendation – An osteoporosis risk identification and awareness program

The Australian public and, in particular, older Australians would benefit from a nationally coordinated approach to increase osteoporosis awareness and diagnosis. Diagnosis and management of osteoporosis is already subsidised through the MBS and PBS, although poorly accessed relative to the total burden of osteoporosis in the community. 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.

A National Osteoporosis Risk Identification and Awareness program (the Program) is envisioned to include the following:

- 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
- Campaigns to raise awareness around osteoporosis and the Program
- A registry to track activities (including information flow) and participation
- A pilot (outlined below) to test the impact of the Program before national roll out

The Program would be a component of the **National Osteoporosis Strategic Plan** which is currently in development (by Osteoporosis Australia), and will complement the national secondary fracture prevention initiative that was proposed in the previous Federal Budget cycle (provided in Appendix E) and has been resubmitted for reconsideration in the current Federal Budget cycle. The Program would also support the sustainability and strategic directions of the health and ageing sectors as it is aligned to the National Strategic Framework for Chronic Conditions (as can be seen in more detail in Appendix F) to achieve a positive impact for people with osteoporosis.

Beginning with a pilot to test and measure impact

A two-year pilot would test the impact of the Program including uptake, diagnosis, treatment rates, and be a proof of concept for subsequent national roll out. It is recommended that the pilot scope include **targeting the population over 70 years of age in *three* Primary Health Network (PHN) regions** (by sending a letter) and comparing key metrics with three other PHN regions (control group).

It is anticipated that funding of **$4.5 million** from the Australian Government in the 2019-20 financial year would be needed to support a two-year Pilot Program, including costs to establish a registry, local awareness campaigns, monitoring and analysis, and evaluation.

Benefits of a risk identification and awareness program

Osteoporosis risk identification and awareness will lead to an anticipated increase in osteoporosis diagnosis and management, and result in:

- fewer fragility fractures
- improvements in quality of life for older Australians
- reduced health and aged care costs from avoided fractures

Over the two-year pilot timeframe, it is estimated that over ***51,000 people will be newly diagnosed and treated for osteoporosis and 2,200 osteoporotic fractures will be avoided,***[ii] leading to a total estimated financial benefit of ***$58.9m***, including:

- ***$41.6m*** over two years from avoided primary and secondary fractures (a total of 2,200 fractures) and the total reduced health system management costs in the acute and primary care sectors, with benefits received by both the Commonwealth and state/territory governments
- Commonwealth funded aged care benefit of ***$2.5m,*** with 71 older Australians staying in their own homes for another year due to avoided fractures[10]
- the avoidance of ***$13.2m*** in Commonwealth funded home help costs, with more than 700 people not requiring home help due to avoided fractures
- a ***$1.9m*** community benefit in avoiding the need for informal care, with 230 people not requiring additional help from loved ones or members of the community due to the avoidance of osteoporotic fractures.

The ***total estimated Pilot benefits over two years are $58.9m,*** compared to estimated cost for the Pilot Program of $50.9m. The pilot costs consist of implementation costs of $4.5m, and costs of diagnosis, management and treatment of $46.4m.

In addition, the avoided fractures would reduce the health burden for older people and lead to an estimated 4,950 quality adjusted life years (QALYs) being saved, at an additional societal value of $206 million.[iii]

These benefits are based on the assumption of a 40 per cent participation rate of those aged 70 and over. Innovations such as behavioural science could further increase the impact and benefits of the Program. These are discussed in more detail in Appendix C.

A detailed National Program would be developed after the pilot, using insights and lessons learned to reduce the burden of osteoporosis across Australia. The National Program 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.

The increased risk identification and awareness will 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 300 older Australians staying in their own homes longer due to avoided fractures every year once the program is rolled out across Australia.

The National Program is estimated to reduce total treatment and management costs for the patient cohort due to avoiding both hip and non-hip fractures. The estimated health services avoided due to the National Program is an estimated ***2,500 GP visits avoided, 7,000 hospitalisations avoided, and an estimated 82,000 hospital bed days avoided*** by the patient cohort participating in the national Program every year.

[ii] Key assumptions include a 40% participation rate for older people targeted in the pilot. Of those who participate, 43% of women, and 13% of men are estimated to be diagnosed with osteoporosis. Treatment and management of osteoporosis will lead to an estimated 27% reduction in fracture risk considering varying adherence rates (*Further assumptions and sources can be found in Appendix E*).

[iii] Value of a QALY is estimated to be $42,000, based on Huang, L., Frijters, P., Dalziel, K. and Clarke, P. (2018). Life satisfaction, QALYs, and the monetary value of health. *Social Science & Medicine*, 211, pp.131-136.

Osteoporosis Risk Identification and Awareness Program

The Challenge

In Australia, osteoporosis is generally not diagnosed and treated even after a fragility fracture.
Major fragility fractures require costly medical care.

It is estimated that **1.2 million** people have osteoporosis in Australia

In 2017 there were **160,000 osteoporotic fractures**

In 2017 osteoporotic fractures cost the Australian economy over **$2 billion** in direct costs

There is a lack of public **awareness** around osteoporosis

80% of women and **90%** of men do not receive appropriate treatment, despite having presented with a fragility fracture

Risk of a fracture can be reduced by **50%** through appropriate care

The Program

What will it look like?

Targeting those aged 70+

Letters sent to target population via a registry office (potential follow up calls)

Targeting to occur for those with

- osteopenia every **2** years,
- normal BMD every **5** years

Treatment to be implemented and managed for those with osteoporosis.

Potential value?

Improves **public awareness** on the dangers of osteoporosis

Early diagnosis and risk identification

Appropriate **treatment and management**

Lowers the risk of fractures

Link to Government Priorities

Osteoporosis is a **musculoskeletal disease** that forms part of the National Chronic Disease Strategy and **National Strategic Framework for Chronic Conditions**

There is an opportunity to take action in

- promoting **early detection**,
- promoting **out of hospital care**,
- appropriate **chronic disease management**, and
- improving **health outcomes related to osteoporosis**

Estimated Benefits

Pilot program

- **430,000 people targeted over 2 years**
- **170,000 people will have BMD scans**
- **51,700 people will be newly diagnosed with osteoporosis**
- **2,200 fractures prevented**
- **71 people will stay in their homes for longer**
- **$58.9 million in benefits from avoided direct costs**

The issue – Osteoporosis challenges and costs

Osteoporosis is a chronic disease that leads to an increased risk of fragility fractures for people living with the condition. The prevalence and risks of osteoporosis increase with age and it is estimated that more than 80 per cent of the population over the age of 70 have osteoporosis or osteopenia (low bone mineral density indicating high risk for osteoporosis) in Australia.[11] However, osteoporosis also impacts other cohorts, including 23 per cent of women and 6 per cent of men aged 50 – 69,[12] as well as those on certain medications or suffering other diseases (e.g. prolonged steroid therapy or rheumatoid arthritis).[13]

In 2018, more than 1.2 million Australians are estimated to have osteoporosis and approximately 800,000 of those affected are over the age of 70 years.[14]

Burden of osteoporosis

In 2018, there will be an estimated 166,000 fragility fractures in older Australians.[15] Due to population growth and ageing, without improvements in diagnosis and treatment of osteoporosis, the rate of fractures is estimated to double by 2030.[16]

Fragility fractures lead to considerable costs to individuals, their families and the healthcare system:

- **Decrease in the quality of life for older people:** osteoporotic fractures can cause loss of function and significantly decrease an older person's ability to remain independent and live in the community. Major fragility fractures can lead to ongoing pain, long term disability, admission to a residential aged care facility and even death. Hip fractures cause the greatest mortality, with up to an estimated 20 per cent of people suffering from hip fractures dying within the first year, with five per cent of this group dying in hospital.[17] An increased risk of death may continue for years following a hip fracture.[18] Many who survive do not regain their pre-fracture mobility, which impacts on their physical and social functions in daily life.
- **Considerable cost to the health care system:** major fragility fractures, such as hip fractures, are costly to treat, on average costing upwards of $38,000[iv] per fracture.[19] Up to 70 per cent of the cost burden of osteoporosis is related to the cost of fractures**.** These costs include medical care such as ambulance transport, acute lengths of stay at hospitals, emergency surgery, and rehabilitation. In 2016, it was estimated that osteoporotic fractures cost the Australian economy over $2 billion in direct costs.[v,20] After a fracture, people may also incur support care and informal care costs, usually covered out of pocket by the individuals and their families.
- **Aged care costs:** osteoporotic fractures can result in long term disability or functional limitations. A major fracture may require care provided in residential aged care settings, or require increased care within the home, provided by professionals or informally by loved ones. It is estimated that 10 per cent of people who have a hip fracture need to enter into a residential aged care facility because of their fracture.[21]

Costly fractures could be avoided

It is estimated that osteoporotic fractures cost the Australian economy over $2 billion in direct costs in 2016.[v, 22]

The risk of a first fracture can be reduced through appropriate care and interventions,[23] such as 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 per cent of post-menopausal women, and 90 per cent of men not receiving appropriate treatment, even after a fracture.[24] Furthermore, it is estimated that less than ten per cent of people over the age of 70 accessed subsidised diagnostic services (such as BMD scanning) for osteoporosis in 2017.[25] 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

[iv] The cost of a major fragility fracture in 2018 has been adjusted for inflation from the 2012 cost of $31,000.
[v] Direct costs include costs that accrue to the states and territories (including emergency assistance, surgery, hospital stays) and the Federal Government (primary care and specialist visits, medication costs, and aged and community care costs).

general public, operational silos across the health system and a lack of focus on osteoporosis compared to other chronic diseases.

Almost all osteoporotic fractures require costly medical care including emergency assistance, surgery, hospital stays, rehabilitation and community services (such as home 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, radiologists, general practitioners (GPs)
- ***management*** using services from GPs, nurses, dietitians, exercise physiologists, aged care workers, clinical nurse specialists
- ***treatment*** using services from GPs, geriatricians, pharmacists, aged care nurses/nurses, rheumatologists
- ***care*** from Emergency Departments, radiologists, endocrinologists, orthopaedic surgeons
- ***rehabilitation*** using physiotherapy, and exercise physiologists.

Osteoporosis within the national health context

Although osteoporosis is considered a National Health Priority Area within the Arthritis and Musculoskeletal Disease subcategory,[26] and diagnosis and treatment are subsidised nationally, there is a lack of diagnosis and treatment of osteoporosis, indicating that this chronic condition is not being optimally managed.

A national approach to increase awareness, promote health literacy, engage with older people and increase osteoporosis diagnosis would support people to access the services and care they are entitled to, and reduce the risk of avoidable and costly fragility fractures. The Program is aligned to the National Strategic Framework for Chronic Conditions,[27] and there is an opportunity to take action in promoting early detection, appropriate chronic disease management, and improving health outcomes related to osteoporosis. A summary of the Strategic Priority Areas and how this Program aligns to the National Strategic Framework for Chronic Conditions is provided in Appendix F.

A National Osteoporosis Strategic Plan is currently being developed by Osteoporosis Australia and key stakeholders. It is anticipated that this Plan will be finalised in March 2019 and will contain five priorities and approaches to reducing osteoporosis risk in Australia including:

- a National Secondary Fracture Prevention Program (SFPP)
- a National Osteoporosis Risk Identification and Awareness Program (the Program in this submission).

The executive summary from the recent SFPP submission is provided in Appendix E.

This proposal represents a partnership approach that was envisioned in the National Strategic Framework for Chronic Conditions, and a number of the key principles outlined in that document reflect the merits of an increased focus on prevention for a healthier Australia.

Impact of osteoporosis if nothing changes

Australia is an aging population, with the number of Australians aged 65 and over expected to more than double in the next 40 years, which will have cost implications on the health and aged care sectors.[28] As seen in Figure 1Figure 1, 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.

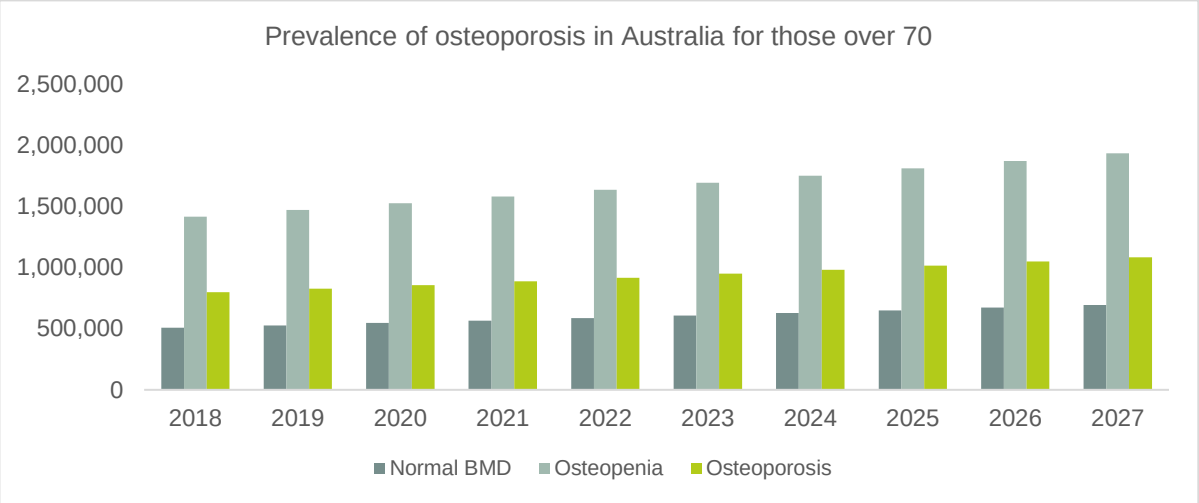


Figure 1 Prevalence of osteoporosis

The increased number of people 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 and have osteoporosis, compared to those of the same age with a normal bone mineral density.[29]

In the next 10 years, as seen in Figure 2, 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. ***Investing in solutions that reduce this burden and support system sustainability will be socially and economically valuable now and in the future.***

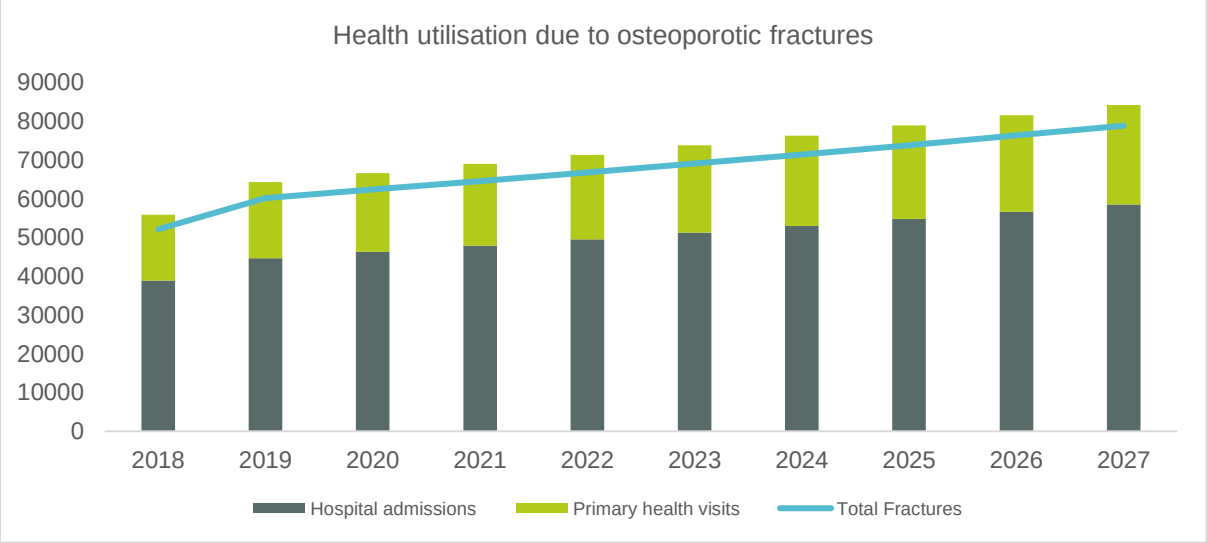


Figure 2 Health utilisation due to osteoporotic fractures

The recommendation – A National Osteoporosis Risk Identification and Awareness Program (the Program)

A national approach to osteoporosis risk identification and awareness, with leadership and investment from the Australian Government, presents an opportunity to help prevent escalation of osteoporosis and the associated costs of fractures. The Program is aligned to the National Strategic Framework for Chronic Conditions,[30] and there is an opportunity to take action in promoting early detection, appropriate chronic disease management, and improving health outcomes related to osteoporosis.

The risk identification and awareness program (the Program) is envisioned to include the following:

- letters sent to men and women over the age of 70, 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
    - invite them to undertake a BMD test at their preferred radiology clinic (the letter is proposed to act as the referral)
    - encourage recipients to discuss the issue with their GP either before or after the BMD test. The referral allows for BMD services to be accessed directly and subsequently visit their GP to discuss the results, and if appropriate, a relevant course of action for treatment
- public campaigns to help raise awareness around osteoporosis and the Program
- a registry to track activities including information flow and registration

Figure 3Figure 3 provides an overview of the approaches currently in the National agenda to minimise the risk and impact of osteoporosis and fragility fractures. The Program is designed to focus on identifying those with osteopenia and osteoporosis early to reduce their risk of fracture. ***Targeting those over the age of 70 years will capture those most at risk of osteoporosis and of osteopenia.***[31]

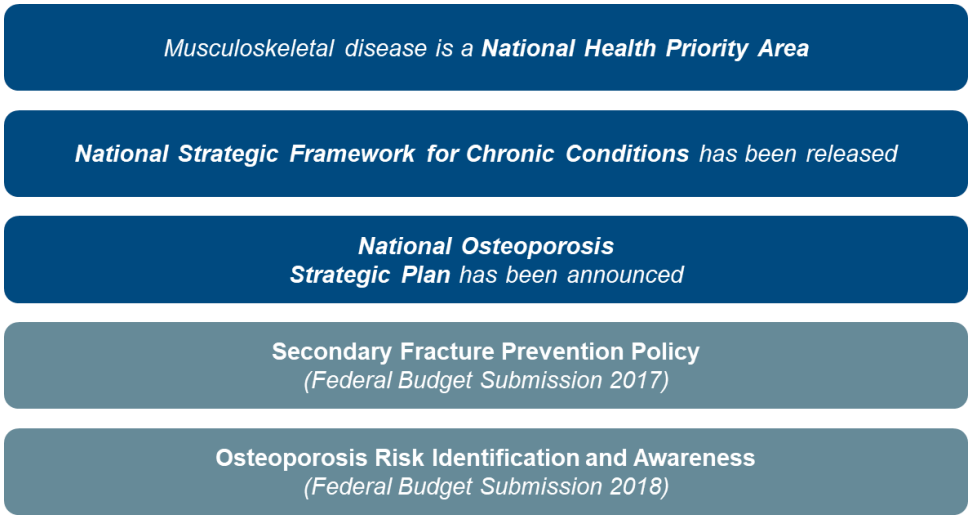


Figure 3 The path to better bone health

The Program would be part of a National Osteoporosis Strategic Plan which is currently being developed by Osteoporosis Australia and key stakeholders. This Strategy will potentially include the proposed national Secondary Fracture Prevention Program (SFPP) presented to the 2018/19 Federal Budget, which focuses on those who have already had a fragility fracture. Appendix E contains a summary of the proposed national approach to a SFPP. The Program outlined in this submission will complement the SFPP and target older people before the first fragility fracture, however the Program will also support the efforts of the SFPP work through identification of people with osteoporosis that are not aware they have had a fracture or have not yet been identified through the system.

Program framework

The Program cost and benefit framework (as seen in **Error! Reference source not found.**) identifies the benefits of the Program to include:

- first fractures avoided
- secondary fractures avoided
- aged care admissions avoided
- home and community support avoided
- informal care and support avoided.

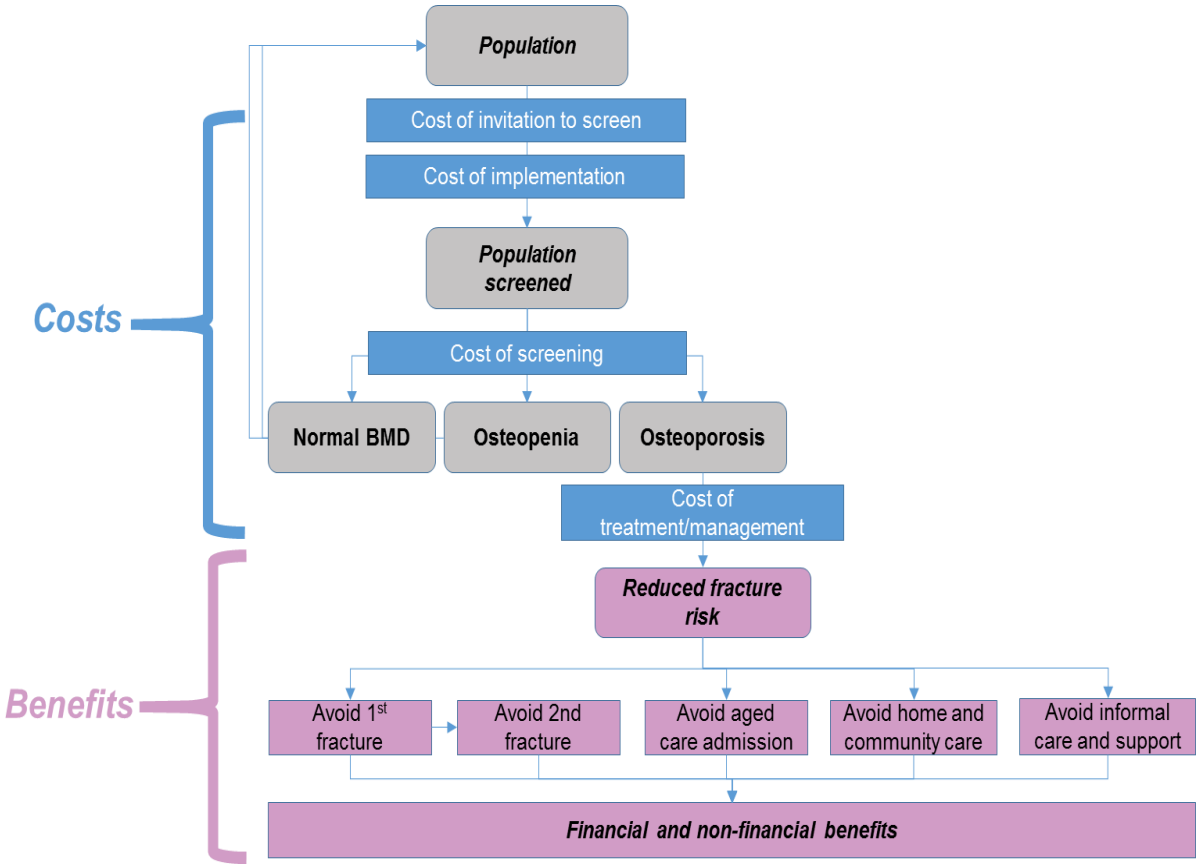


Figure 4 Program benefits framework

Each benefit element of the framework is described below.

Risk of fractures

A diagnosis of osteoporosis is established when a person's t-score[vi] is -2.5 or lower, with a lower t-score meaning a greater risk of fracture.[32] The benefit from fractures avoided includes the total reduced costs for the patient cohort of avoided surgery, length of stay in hospitals, ambulance transportation fees, GP visits and rehabilitation.[33]

The risk of a secondary fracture increases by up to three times within one year of a person suffering their first osteoporotic fracture.[34] A conservative approach has been taken when estimating secondary fractures avoided. A secondary fracture can occur at any time after the first fracture. Most secondary fractures occur between six months to five years following the first fracture, with the risk highest within one year of a first fracture[35] (see Appendix D for more details).

Aged care admission due to a fracture

Osteoporotic fractures often result in long term disability or functional limitations. A major fracture may require admission to residential aged care settings, as some people will no longer be able to live independently in their home environment. It is estimated that more than 10 per cent of people who have a hip fracture lose their independence and mobility, and need to enter an aged care facility because of their complex care needs.

Help at home needed due to a fracture

Fractures also require increased care within the home,[36] provided by professionals, and is often funded through the Commonwealth Home Support Programme (CHSP). A person is eligible if they require coordinated care services to help them stay in their homes for longer, and fractures often require ongoing management from multiple touchpoints of the health and aged care sectors, including physiotherapy, exercise physiologists, occupational therapists, and aged care nurses.[37]

Informal care and support needed due to a fracture

The management, rehabilitation and recovery after a major osteoporotic fracture leads to a significant shifts in a person's health, and often requires informal care from family as a form of support.[38] Informal support is provided by family members to help perform daily tasks and can often have emotional, physical, and financial impacts for the person providing informal care. The financial impact was estimated using information from the Geelong Osteoporosis Study, which assessed hours of support required per week over 12 months, as well as the average wage of a carer in 2018 of $29 an hour (See Appendix D for more details).[39]

In line with the Program benefits framework, the estimated impact of the pilot per person is described in the table below.

Table 1 Estimated benefits of the Pilot Program

Benefits	Estimated cost per person (p.a.)	
Fracture type	***Non Hip***	***Hip***
First and secondary fractures avoided	$ 12,000	$ 38,000
Residential Aged care support avoided	$ 35,000	
Home care support avoided	$ 19,000	
Informal care and support avoided	$ 7,200	

[vi] A t-score is the number of standard deviations a person's bone density is above or below that of a young adult bone density of the same sex.

A Pilot Program to test and measure impact

It is recommended that an initial two-year pilot is funded to test Program uptake, diagnosis and treatment rates and be a proof of concept for a subsequent national roll-out.

Pilot design

The pilot would run across a number of PHN regions, where half the PHNs are actively targeted by the Program to participate, and the remaining PHNs acting as the control group to compare uptake and benefits of the program. There are a variety of options to approach the specific pilot design and size, and experts will be consulted to detail the best approach for the Pilot Program. The pilot should be a practical concept test of the Program for potential national roll out (it is not intended for the pilot to be a randomised controlled trial). For the purpose of this submission we have scoped the following:

- Six PHNs in scope for the pilot:
    - Three PHNs to be actively targeted, with up to 430,000 people targeted across all sites. Those targeted will not already be undertaking osteoporosis treatment
    - Three PHNs would act as the control group to compare uptake and benefits of the Program

Six participating pilot regions will allow for a well-rounded understanding of what a national implementation may look like. By incorporating target and control PHN regions to establish pilot regions, program bias will be minimised and societal variables can be controlled (such as age, gender, and socioeconomic factors). It is recommended that the six sites include two metropolitan, two regional and two rural PHN regions.

Appendix B shows varying diagnosis and treatment costs and benefits depending on the number of PHNs chosen for the pilot.

The Pilot Program will test participation and uptake based on people targeted who will subsequently:

- have a BMD scan
- receive their diagnosis
- if osteoporotic, progress to appropriate treatment and management.

Participation will be tracked, with informed consent, by a registry. Figure 5 depicts the pilot pathway.

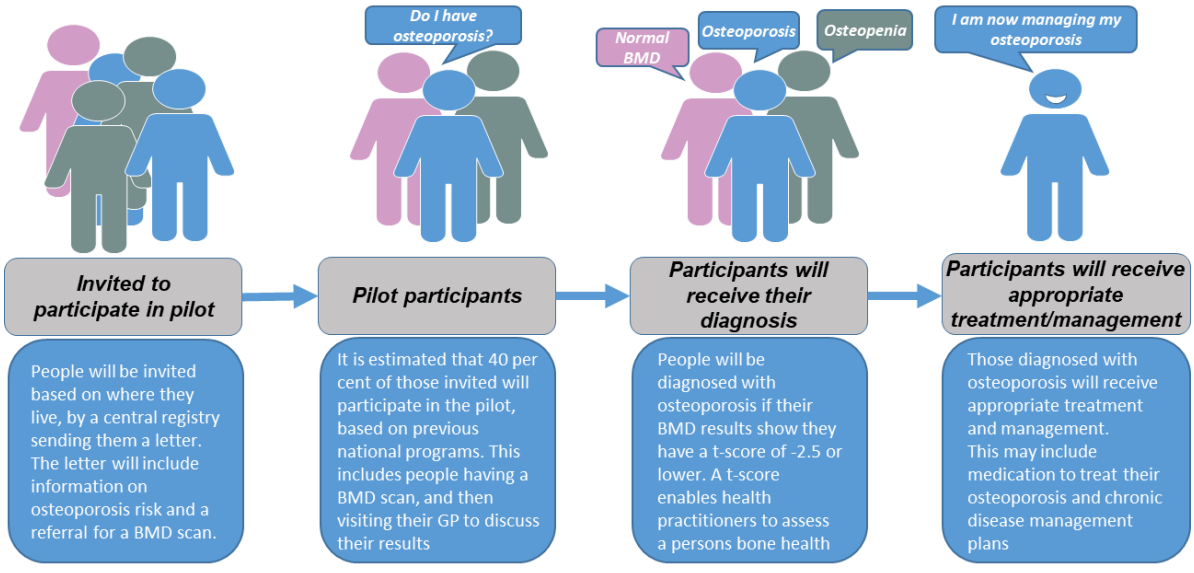


Figure 5 The pilot pathway

Key components of the Pilot Program:

It is assumed that the Pilot Program will require:

- letters to be 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
- a registry to track activities (including information flow) and participation
- campaigns to help raise awareness around osteoporosis and the Program
- monitoring, analysis and evaluation to assess the impact and lessons learned from the Program.

The registry would be appropriately authorised to access MBS and PBS data. The registry would implement the Program across the pilot sites. Responsibilities of the registry office will include:

- 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 the GP)
    - a referral for a BMD scan
- data collection and entry into the registry for monitoring and analysis of outcomes
- liaising with teams on local campaigns and considerations
- identifying areas for future improvement and options to increase effectiveness and efficiencies nationally.

Local Campaigns in the pilot locations would help raise awareness, explain the program and support uptake. Various organisations could develop and help roll out local campaigns, including the Australian Medical Association (AMA), Osteoporosis Australia (OA), PHNs, and the Royal Australian College of General Practitioners (RACGP). The campaigns will support roll out and uptake by targeting:

- local at-risk individuals to increase their awareness of the risks of osteoporosis and value of participating
- 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.

Monitoring and analysis would be conducted across the pilot sites to assess participation. Analysis can be conducted through monitoring:

- utilisation of MBS codes for dual-energy X-ray (DXA) scanning by gender, age sub-cohort, and region
- osteoporosis medication being prescribed under PBS during the two-year pilot, and analysis of uptake and adherence.

Monitoring and analysis would be conducted by the Registry office, or a Government team that can access MBS and PBS data.

An evaluation of the Program should 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. Evaluation questions to consider for a national roll out (a National Program) could be:

- Are there behavioural considerations that impact on program participation? Is the timing of the letter important?

- What follow up should occur if targeted individuals do not attend for screening within a defined period of time?
- Should campaigns be tailored differently for men and women to improve patient literacy and program participation? (e.g. consider workplace campaigns to educate and encourage men to participate rather than general health campaigns)
- What specific considerations need to be in place to better support particular populations (e.g. Indigenous, rural/remote; non-English speaking background) in all locations?
- How can clinicians be supported to close the care gap in osteoporosis diagnosis and treatment?
- How can access to services be improved in rural and remote settings? How could mobile DXA vans and telehealth services support people in these settings?
- Are there further barriers that need to be considered and overcome?

Appendix B contains further estimates on the scale of costs and benefits for a potential National Program for osteoporosis risk identification and awareness.

Estimated funding required for the pilot

The Australian Government investment requirement for the pilot is estimated at ***$4.5 million in funding*** over financial years 2019-20 and 2020-21 (a cost breakdown can be seen in Table 2). This includes:

- ***$2.7m*** in set up and operation of the registry, including staffing, administration and recruitment costs
- ***$1.4m*** in implementation, monitoring and analysis of the pilot
- ***$0.5m*** in funding for awareness and communications campaigns

Table 2 Financial investment needed

Financial year	2019-20	2020-21	2021-22	2022-2023	Total over four years*
Costs	$ 2.7m	$ 1.8m	$ -	$ -	$ 4.5m

**Four year forward estimates*

Due to the increased utilisation of services, the estimated MBS and PBS flow-on costs incurred will be ***$46 million during the two-year pilot,*** which includes:

- ***$21m*** in MBS costs
- ***$25m*** in PBS costs.

These are costs that would otherwise be incurred if eligible individuals had already been identified with osteoporosis and were being treated appropriately. While these represent new costs (for those currently not being managed appropriately for osteoporosis) to the system, these primary care costs can help prevent subsequent acute care incidences (being experienced today) and should be seen as an investment into preventative health.

It is important to note that the cost and benefit analysis prepared for this submission is based on high-level analyses to provide an indicative scale of impact. Actual costs will be dependent on the number of people who participate in the pilot as well as other factors related to medical practitioner judgement, such as type and length of treatment. The resources needed for the implementation of a Pilot Program have been estimated based on stakeholder consultations and existing literature. Appendix D provides further detail on the assumptions used for the high-level analysis.

The following table includes considerations for the different cost categories required to undertake an osteoporosis risk identification and awareness Pilot Program.

Table 3 Cost estimates for the implementation of the Pilot Program

Category	2019-20	2020-21	Total pilot cost	Considerations
Registry costs	$1.5 m	$1.2 m	**$ 2.7 m**	Registry costs include • development and maintenance of the registry • physical offices • staffing costs (the registry team) • cost to contact members of the pilot sites to take part in the pilot, including letters and phone calls
Pilot implementation, monitoring and analysis	$1.0 m	$0.4 m	**$ 1.4 m**	Implementation, monitoring, and analysis will be conducted by the registry team. The team will aid in: • support, design, and implementation • implementing lessons learnt • analysis and reporting of the 2 year pilot.
Awareness campaigns	$0.3 m	$0.2 m	**$ 0.5 m**	Campaigns to target older people and GPs in the community and encourage participation during the pilots.
Total*	***$2.7 m***	***$1.8 m***	***$4.5 m***	

**Difference in totals may not add due to rounding*

MBS and PBS costs

MBS costs incurred by the government as a result of the pilot are in addition to the requested funding and are based on:

- the cost of the diagnostic testing required (a DXA scan) with a current fee of $87.04
- a visit to a GP, a current fee of $37.60 to receive diagnosis.

PBS costs have been calculated using the current osteoporosis medications available on PBS, as well as the volume of scripts dispensed during 2017:

- There is an estimated average annual treatment cost of $490 per person diagnosed with osteoporosis.[40] This cost average is based on the costs of osteoporosis medications currently available on the PBS.
- Adherence rate assumptions have been developed using insights from stakeholders and the literature, and adherence is dependent on the osteoporosis medication.[41] Adherence is assumed to reduce over time for the target population, from 70 per cent of people adhering to treatment regimes in the first year to 40 per cent by year five.[42]

The following table provides an overview of the annual additional MBS and PBS cost estimates incurred due to a two-year Pilot Program conducted across three actively targeted PHN regions. Total costs focus

on the government cost and does not include potential out of pocket costs. These are costs that would otherwise be incurred if eligible individuals had already been identified with osteoporosis and were being treated appropriately.

Table 4 Total estimated costs incurred due to the Pilot[vii]

Financial year	2019-20	2020-21	2021-22	2022-2023	Total over four years
Total MBS costs	$ 10.4m	$ 10.7m	$ -	$ -	$ 21.1m
Total PBS costs	$ 12.5m	$ 12.7m	$ -	$ -	$ 25.2m

[vii] Actual MBS and PBS costs will depend on factors such as the participation rate, the number of pilot sites in scope, the type of treatment recommended, and a person's adherence to treatment. Appendix D provides further detail on the assumptions used for the high-level analysis.

Estimated benefits of the Pilot Program

Osteoporotic fractures are associated with multiple health sector costs, including direct costs that accrue to the states and territories (including emergency assistance, surgery, hospital stays) and the Federal Government (primary care and specialist visits, medication costs, and aged and community care costs). The majority of hip fractures (94 per cent) result in hospitalisations, while non-hip fractures can also present to primary care centres for management or result in a hospitalisation for acute management (33 per cent and 67 per cent respectively). The potential benefits of investing in an osteoporosis risk identification and awareness program are substantial. During the two-year pilot across six PHN regions, it is estimated that an additional ***51,700 people will be newly diagnosed and treated for osteoporosis,*** and ***2,100 osteoporotic fractures will be avoided.***[viii]

Health services utilisation

The two-year Pilot Program is estimated to reduce total treatment and management costs for the patient cohort, due to avoiding both hip and non-hip fractures. The estimated number of ***hospitalisations directly avoided due to the two-year Pilot Program is an estimated 1,650 hospitalisations, as well as an estimated 580 GP visits avoided***. This is due to the avoidance of 1,650 non-hip fractures and 560 hip fractures by the patient cohort participating in the two-year Pilot Program.

Osteoporotic fractures are also associated with lengthy hospital stays, with the average length of stay in hospital of 3.4 days for older Australians,[43] compared to the average hospital length of stay for a fragility fracture of 11.5 days for a hip fracture and 8 days for a non-hip fracture.[44] Bed days avoided due to the total number of fractures avoided by those who participate in the Pilot Program ***will lead to an estimated 19,000 hospital bed days avoided across the pilot regions due to the two-year Pilot Program.***

A breakdown of estimated health service utilisation avoided due to the Pilot Program can be seen in Table 5.

Table 5 Health service utilisation

Financial year	2019-20	2020-21	2021-22*	2022-2023	Total over four years
Primary health visits avoided	250	290	40	-	**580**
Hospitalisations avoided	730	830	90	-	**1,650**
Bed days avoided (Length of Stay)	8,400	9,600	1,000	-	**19,000**

**The total estimated health services avoided in FY 2021-22 is a result of secondary fractures avoided by the patient cohort of FY 2020-21, due to an assumed one-year delay between a first and second fracture.*[45]

The associated benefit is estimated at ***$58.9m,*** including ***$41.6m*** over two years from avoided first and second fractures and their related health system costs. Avoided fractures will lead to an ***estimated aged care benefit of $2.5m*** with 71 older Australians staying in their own homes for another year due to avoided fractures (given that 11 per cent of hip fractures result in aged care admissions).[46] The pilot is also estimated to lead to the avoidance of ***$13m in federal spending from the Commonwealth Home Support Programme*** costs, as well as lead to a ***$1.8m benefit in avoiding the need for informal care*** from family or members of the community due to the

[viii] The 51,700 estimated newly diagnosed people are additional to the estimated 50,000 people already being treated yearly for osteoporosis within the pilot regions, see Appendix D for further information.

avoidance of osteoporotic fractures from the patient cohort participating in the pilot over the two-year period.

A breakdown of estimated benefits can be seen in Table 6.

Table 6 Total benefits of the Pilot Program

Benefits	2019-20	2020-21	2021-22	2022-2023	Total over 4 years	Impact of the pilot
First fractures	$ 18.7 m	$ 19.3 m	-	-	**$ 38 m**	Up to **2,000 fractures** will be avoided
Secondary fractures	-	$ 1.8 m	$ 1.8 m	-	**$ 3.6 m**	Up to **120 secondary fractures** will be avoided
Aged care	$ 1.2 m	$ 1.3 m	-	-	**$ 2.5 m**	More than **70 people will be able to stay in their homes** another year
Home care	$ 6.4 m	$ 6.6 m	-	-	**$ 13 m**	More than **700 people will not require additional home care**
Informal care	$ 0.9 m	$ 0.9 m	-	-	**$ 1.8 m**	More than **300 people will not require loved ones to provide informal care**
Total benefits	**$ 27.2m**	**$ 29.9m**	**$ 1.8m***	**-**	***$58.9 m***	

**The total estimated benefits realised in FY 2021-22 ($1.8m) is a result of secondary fractures avoided by the patient cohort of FY 2020-21, due to an assumed one-year delay between a first and second fracture.*[47]

Overall impact of the Pilot

The two-year Pilot Program will be integral in applying lessons learned for a national roll out of the osteoporosis risk identification and awareness program, including actual uptake and participation rates and what influences them. The ***estimated pilot benefits of $58.9m*** exceed the estimated program costs of $50.9m, indicating a strong strategic fit with the National Strategic Framework for Chronic Conditions.

Table 7 Total Benefits and Costs of the Pilot Program

Financial year	2019-20	2020-21	2021-22	2022-2023	Total over 4 years
Total benefits	$ 27.2m	$ 29.9m	$ 1.8m*	$ -	$ 58.9m
Total costs	$ 25.5m	$ 25.3m	$ -	$ -	$ 50.9m

Additional benefits to consider as a result of the Pilot

The total cost and benefit estimates have been developed using conservative assumptions. There are likely additional benefits that have not been included in the estimated benefit total, including the value of increased osteopenia identification and the benefits to older people's quality of life and avoided early deaths from osteoporotic fractures.

Increased identification of osteopenia

People with osteopenia are those with low bone density and weak bones, but not low enough to be diagnosed with osteoporosis. Osteopenia affects a greater number of people in Australia compared to osteoporosis and also leads to fragility fractures.[48] In 2018, it is estimated that more than 1.4 million Australians over the age of 70 have osteopenia,[49] with 43,500 of these people estimated to suffer from a fragility fracture within the next year.[50] The burden of osteopenia will continue to increase due to an aging population, with nearly 2 million people over the age of 70 estimated to have osteopenia in 2027.[51]

Although intervention costs and fracture prevention benefits for people diagnosed with osteopenia are not included in the high-level cost benefit analysis (osteopenia is not funded under the Pharmaceutical Benefits Scheme), there is preliminary research which suggests that exercise can increase a person's bone mineral density (BMD) and prevent fragility fractures.[52] These important early steps to prevent or reduce bone deterioration to the point of osteoporosis are important in the context of preserving future costs, and improving health outcomes for older Australians.

The progression of osteopenia to osteoporosis depends on an individual's bone mineral density, as seen in Figure 6. On average the progression of osteopenia to osteoporosis has been found to take five years, and in some cases can advance towards osteoporosis in just one year.[53] As intervention methods improve for osteopenia, it may be possible to prevent the progression towards osteoporosis.[54]

An estimated 88,000 people will be identified with osteopenia during the two-year Program pilot.

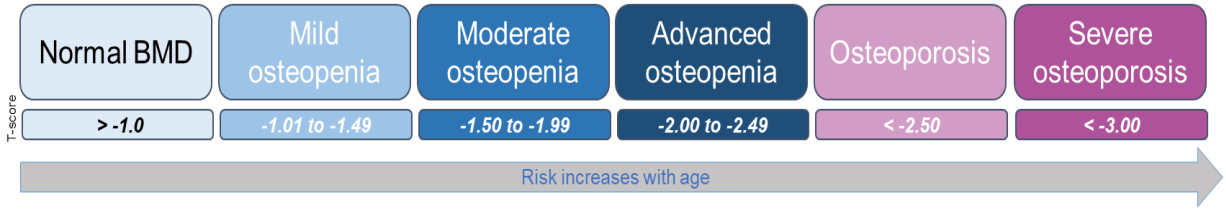


Figure 6 Deterioration of bone mineral density (BMD)

Quality Adjusted Life Years gained

Major fractures are associated with a diminished quality of life due to a loss of independence, mobility, sense of safety, and need for further medical interventions such as rehabilitation. A person's length of life may also be compromised by osteoporotic fractures, particularly hip fractures. A quality adjusted life year (QALY) is a measure of disease burden, including the quality and quantity of a person's life. A person with a fracture in Australia has been found to have a lower quality of life, and lower QALYs, compared to a person who does not have a fracture.[55]

In the 2-year pilot phase, the total fractures avoided by those who participate in the Pilot Program ***will lead to an estimated 5,000 QALYs gained.*** QALYs were calculated using the average life years remaining of a person at the point in their life when they suffered a fracture (based on Australian Bureau of Statistics Life Tables),[56] and the change in their quality of life due to their fracture.[57]

Mortality from fractures

Major fragility fractures, such as hip fractures, can lead to an early death for older Australians. An audit conducted by the Australian and New Zealand Hip Fracture Registry (ANZHFR) found that 20 per cent of those who suffer a hip fracture will die within a year of the fracture occurring.[58] The Program is estimated to avoid 106 early deaths due to the two-year pilot.

Impact of national roll out of the Program

A detailed national Program would be developed after the pilot, using insights and lessons learned. This section provides an overview of the potential scale of costs and benefits if a national program, including a registry, were rolled out over five years (targeting nine PHNs in Year One, and phasing in PHNs yearly to reach the total 31 PHNs in Year Five, as seen in Table 11).

The National Program has a recurring element for some participants, differentiating it from the Pilot:

- All Australians over 70 years of age receiving a letter of invitation to the National Osteoporosis Risk Identification and Awareness Program (phased approach)
    - Those invited to the Program can chose to opt out by notifying the Registry. Those who opt out of the Program will not be contacted again.
    - Those who do not participate will be *invited again in the following phase*.
- Those who participate in the program will complete a BMD scan and subsequently visit their GP for their diagnosis, following the BMD funding criteria, with the outcomes recorded in My Health Record:
    - if diagnosed with osteoporosis, participants will commence appropriate treatment and management as advised by their health care practitioners, and will not be contacted by the Registry again
    - people diagnosed with osteopenia will be encouraged to undergo another BMD scan and will be contacted by the Registry in two years' time
    - those with a normal BMD will be invited by the Registry to rescan in five years' time to check the progression of their bone health.

Estimated yearly costs for a National Program

The total yearly costs for the National Program are estimated at **$194 million**, of which a relatively small proportion are administrative costs. The majority of the costs are incurred in diagnostic and treatment-related costs, which drive the achievement of better health outcomes embodied in the vision of the National Strategic Framework for Chronic Conditions.

The Australian Government would provide an estimated ***$3.7 million in funding*** to enable the implementation of the National Program annually. This includes:

- ***$3.1 m*** in the operation of the registry, including staffing, administration and recruitment costs
- ***$0.3 m*** in monitoring and analysis
- ***$0.3 m*** in funding for awareness and communications campaigns.

Due to the increased utilisation of services, the estimated MBS and PBS costs incurred will be ***$190 million*** which includes:

- ***$87m*** in MBS costs to fund increased DXA scans, as well as GP visits for people involved in the Program to understand their diagnosis and management options
- ***$103m*** in PBS costs to fund treatment for those diagnosed with osteoporosis.

These are costs that would otherwise be incurred if eligible individuals had already been identified with osteoporosis and were being treated appropriately.

Actual MBS and PBS costs would be dependent on factors such as the participation rate in the Program, type of treatment recommended, and a person's adherence to treatment. The cost estimates will be further informed by the costs incurred during the Pilot Program. The high-level cost estimates of the National Program are based on the same assumptions used for the Pilot Program, and can be found in Appendix D.

Table 8 Costs of the national Program

	Estimated cost p.a.	Benefit and cost considerations
Implementation costs	$ 3.7 m	Implementation costs include: • Costs for a National Registry, • invitations to all people over 70 years old • monitoring and analysis, • awareness campaigns.
Total MBS costs	$ 87 m	MBS costs include: • DXA scans, • GP visits to obtain diagnosis
Total PBS costs	$ 103 m	PBS costs include: • Treatment costs for those of the patient cohort who have been diagnosed with osteoporosis.
Total cost	**$ 194 m**	

Estimated annual benefits of a National Program

The benefits of a National Program exceed the cost of its delivery. The National Program will lead to BMD scanning of the 70-year-old and over population to increase to 30 per cent per year, growing from approximately ten per cent currently,[ix] with an estimated additional 750,000 BMD scans being conducted yearly once the program has been rolled out across all 31 PHNs. This increase in risk identification is estimated to lead to an additional 1.8 million older Australians being diagnosed with osteoporosis over a ten-year time frame.

From the additional estimated 750,000 BMD scans conducted yearly, the increased risk identification and awareness will 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 300 older Australians staying in their own homes longer due to avoided fractures every year once the program is rolled out across all PHN's.

The National Program is estimated to reduce total treatment and management costs for the patient cohort, due to avoiding both hip and non-hip fractures. The estimated health services avoided due to the National Program is an estimated ***2,500 GP visits avoided, 7,000 hospitalisations avoided, and an estimated 82,000 hospital bed days avoided*** by the patient cohort participating in the national Program every year.

[ix] In line with estimated US BMD testing utilisation rates for the population of older people after implementation of a national program to increase screening.

Table 9 Estimated benefits of the national program

Benefits	Benefits p.a.	Impact of the national program
First fractures	$154.5 m	Up to **8,500 fractures** will be avoided yearly
Secondary fractures	$14 m	Up to **1,000 secondary fractures** will be avoided yearly
Aged care	$10.8 m	More than **300 people will be able to stay in their homes** another year
Home care	$57 m	More than **3,000 people will not require additional home care** yearly
Informal care	$8 m	Up to **1,500 people will not require family members to provide informal care** yearly
Total benefits	***$244.3 m***	

In addition, the avoided fractures due to the National Program would reduce a considerable health burden for older people. It is estimated that the avoided fractures will lead to approximately 21,000 QALYs being saved at a value of $1 billion yearly once the Program has been rolled out across Australia (not included in economic analysis totals), and will avoid nearly 400 early deaths due to the National Program avoiding approximately 2,000 hip fractures every year.

Annual impact of a National Program at full roll out

The total annual estimated benefits of $244 million in avoided costs outweigh the total annual estimated national program and diagnosis/management and treatment costs of $194 million, ***with a resulting annual benefit cost ratio of 1.3 at full roll out.***

The benefit cost ratio of 1.3 represents a conservative estimate, which assumes that all diagnosed Program participants comply with the recommended approach to medication. If 40 per cent of the estimated PBS costs are excluded from the benefit cost ratio calculation (in line with osteoporosis adherence within year 2 dropping to 60 per cent),[59] the estimated benefit cost ratio increases to 1.6.

The following table provides an overview of the yearly benefit and cost ratio once the national Program has been rolled out across all 31 PHNs.

Table 10 Impacts of the national Program

	Annual BCR	Benefit and cost considerations
Benefit cost ratio	**1.3**	*All Implementation, MBS and PBS costs included*
Benefit cost ratio (excluding PBS costs)	*1.6*	*Excluding 40 per cent of the PBS costs in the BCR, assesses the direct investment needed for the success of the Program.* • ***implementation*** • ***identification*** *(scanning and diagnosis) of the patient cohort*

The costs and benefits are based on the same assumptions used in the pilot approach and can be found in Appendix E.

The impact of the National Program over the next 10 years

The impact of the fully functional Program will lead to a lower incidence of hip and non-hip fragility fractures (as seen in Figure 7), with an estimated 10,000 less fractures occurring yearly due to the Program. A reduction in health services utilisation (as seen in Figure 8) also a benefit of the Program.

These benefits are based on the assumption of a 40 per cent participation rate of those aged 70 and over, and possible innovations such as behavioural science (as discussed in Appendix C) could further increase the impact and benefits of the Program (e.g. adherence and persistence, attendance rates to screening, timely visits to GP.

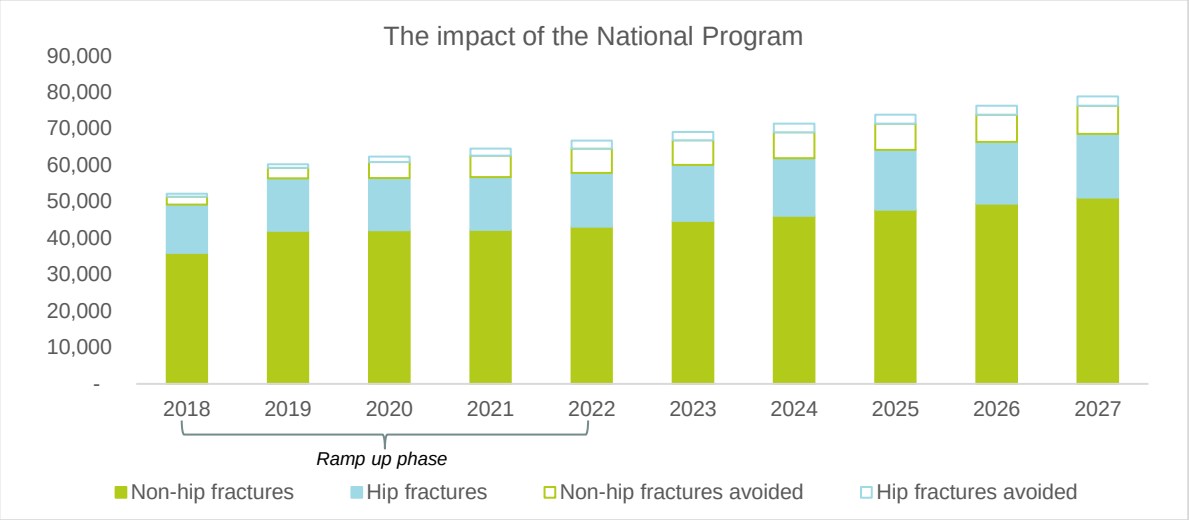


Figure 7 Impact of National Program on total osteoporotic fractures

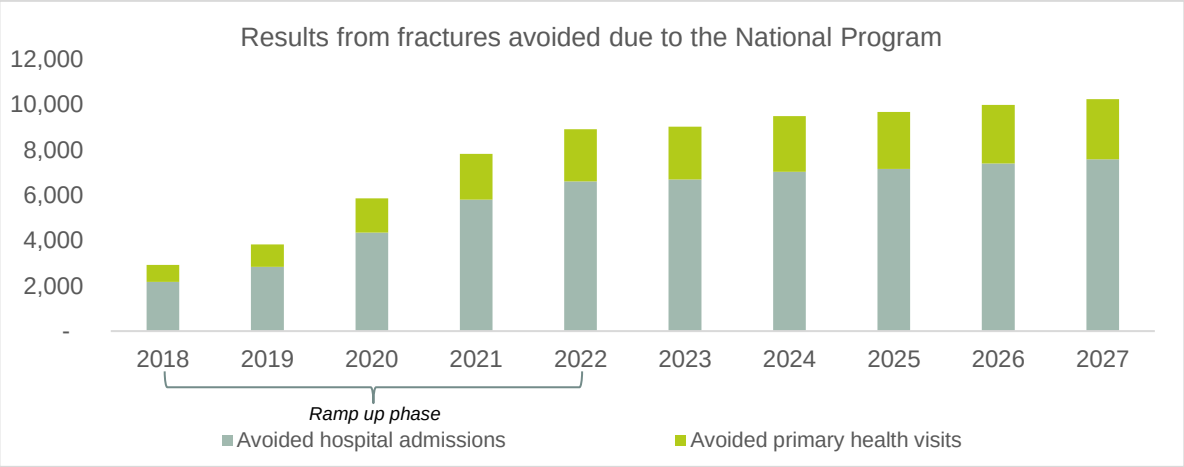


Figure 8 Impact of National Program on health service utilisation

Implementation considerations for the National roll out

The National Program would be implemented using a phased approach in PHN sites over five years,[x] reaching full roll out over 31 PHN regions in year five, as seen in Table 11. It is estimated when the Program has been fully rolled out, approximately 1.8 million people would be invited to participate in each subsequent year. [xi] The National Program would target those that:

- are aged 70 and over in PHN regions
- have turned 70 years of age in that year (approximately 240,000 additional people a year)
- have not participated
- have previously been identified by the Program as having a normal BMD or osteopenia, and are targeted to participate again in five years or after two years respectively (in line with current MBS eligibility criteria*).*[60]

Table 11 Phases of a National Program

Year (Phase)	1 (Ramp up)	2 (Ramp up)	3 (Ramp up)	4 (Ramp up)	5 – 10 (Full roll out)
Number of PHN regions	9 PHNs	15 PHNs	21 PHNs	27 PHNs	31 PHNs
Population invited to participate	640,000	770,000	1,200,000	1,600,000	1,800,000 annually

[x] This ramp up is in line with other public health programs currently operating in Australia, such as the National Bowel Cancer Screening Program.
[xi] Population invited to participate in the Program include those previously identified as having a normal BMD or osteopenia (through the Program) and being reinvited to undergo a BMD scan.

Appendix A: Background

This budget submission has been developed with insights, guidance, and engagement from a collective of key knowledge leaders in osteoporosis, national screening and risk reduction program, and chronic design management:

PricewaterhouseCoopers Consulting (Australia) Pty Limited (**PwC**) was engaged by Amgen Australia Pty Limited (**Amgen**) to provide professional services which included assisting Amgen in the preparation of this submission, using guidance from key stakeholders including:

- Rosemary Calder – Director, Australian Health Policy Collaboration
- Professor Jacqueline Close – ANZ Hip Fracture Registry
- Dr Greg Lyubomirsky – CEO Osteoporosis Australia
- Dr Michael Moore – Central and Eastern Sydney PHN
- Professor Ian Olver AM, MD PhD FACHPM – University of South Australia
- Dr Phuong Pham – Head of Strategy and Policy, Telstra Health
- Professor David Roder – Chair of cancer epidemiology and population health, University of South Australia
- Professor Markus Seibel, MD PhD FRACP, FAHMS – Chair, SOS Fracture Alliance
- Consultations with various relevant Government representatives.

The information, statements, statistics and commentary contained in this submission or referred to in any footnotes to the submission (together, the Information) was collated by PwC based on material provided by Amgen and from public sources. The Information does not express any view or opinion of PwC. PwC has not audited or otherwise independently verified any of the Information and expresses no opinion on its accuracy or completeness. PwC expressly disclaims any and all liability arising from action taken in response to this submission and anyone other than Amgen that chooses to use or rely on the submission does so at their own risk.

This disclaimer applies to the maximum extent permitted by law and, without limitation, to liability arising in negligence or under statute. PwC's liability is limited by a scheme approved under professional standards legislation.

Appendix B: Sensitivity analysis for pilot options

Population targeted – sensitivity analysis

The high-level cost and benefits presented in this submission are reflective of six PHN regions participating in the pilot, and of those that are targeted, those estimated to participate do not include those already undergoing treatment and management for osteoporosis currently. It is important to note the figures presented in this submission are dependent on the number of people participating in the Program.

Table 12 Estimated populations targeted in the Pilot

	4 PHN regions participating in pilot *(2 PHNs targeted, 2 PHNs acting as a control)*	**6 PHN regions participating in pilot** *(3 PHNs targeted, 3 PHNs acting as a control)*
Number of people invited to participate	Up to 290,000 people targeted	Up to 430,000 people targeted

The following cost and benefit estimations are based on four PHN regions participating in the two-year pilot.

Estimated benefits of a Pilot Program targeting four PHN regions

The increased risk identification and awareness due to the Pilot Program targeting up to 290,000 people (as seen in Table 12) will result in approximately ***34,500 people being diagnosed and treated for osteoporosis*** and an estimated ***1,500 fractures being avoided*** in the patient cohorts involved in the Program. Avoided fractures will also lead to up to ***50 older Australians staying in their own homes*** longer due to avoided fractures over the ten-year period.

In addition, the avoided fractures would reduce considerable burden for older people. It is estimated that the avoided fractures will lead to approximately 3,300 QALYs being saved at a value of $164 million over the two years of the Pilot Program (not included in economic analysis totals), and will save more than 70 lives due to the Pilot Program avoiding approximately 350 hip fractures over two years.

The high-level benefit estimates of the Pilot Program targeting four PHN regions are based on the same assumptions used for the Pilot Program, and can be found in Appendix D.

Estimated costs for a Pilot Program targeting four PHN regions

It is estimated that the Australian Government would need to provide $4.3 million in funding to enable the implementation of the National Program over ten years

- $2.4 m in the operation of the registry, including staffing, administration and recruitment costs
- $1.4 m in monitoring and analysis of the pilot
- $0.5 m in funding for awareness and communications campaigns

Due to the utilisation of services during the two-year Pilot, the estimated MBS and PBS costs incurred will be $30.8m which includes:

- $14m in MBS costs
- $16.8m in PBS costs

These are costs that would otherwise be incurred if eligible individuals had already been identified with osteoporosis and were being treated appropriately.

Participation rate – sensitivity analysis

Estimated benefits are directly dependent on the participation rate of the Pilot Program (*currently modelled to be 40 per cent of all those targeted)*. Real world benefits will also depend on a range of other real-life factors including adherence, accessibility, and management by key health stakeholders such as GP involvement in the patient's journey.

Table 13 Increased benefits due to increased participation

Benefits	20% participation	40% participation	60% participation
First fractures avoided	$17.8 million	$38 million	$55.1 million
Secondary fractures avoided	$1.7 million	$3.6 million	$5.2 million
Aged care avoided	$1.2 million	$2.45 million	$3.6 million
Home care avoided	$6.3 million	$13 million	$19.1 million
Informal care avoided	$0.8 million	$1.8 million	$2.7 million
Total	***$27.8 million***	***$58.9 million***	***$85.7 million***

A 20 per cent increase in participation (from 40 per cent to 60 per cent) during the Pilot Program will lead to an estimated increase of $28.3 million in benefits due to the improved diagnosis, treatment and management for the additional 80,000 participants to the Program.[xii] Possible options and innovations to increase participation in the Program can be seen in Appendix C.

[xii] This analysis has been based on the pilot being conducting over six PHN regions.

Appendix C: Opportunities to increase participation and access

As noted in the previous section, impact and benefits from the Program will increase with greater target population participation rates. For example, an increased participation of a further 20 per cent (from 40 per cent to 60 per cent) would lead to an estimated additional $100 million in annual benefits during the national implementation of the Program.[61] A basic, foundational approach to the Program and registry was costed for this submission. However, it should be highlighted that there are likely opportunities to use this foundation to build a strategic resource for Australia, increase participation, access, and adherence and improve health outcomes. Below are some initial innovative ideas to consider exploring for the National roll out.

Participation

Participation by personal choice could be increased by utilising:

- **Behavioural science** which has the potential to improve the effectiveness of public health policy at a low cost.[62] Simple ways to apply behavioural economics to the Program can be adjusting the timing, messaging, or tone of the invitations to the Program.[63]
- **Reminders to participate**, through automated text messages, artificial intelligence chat bots, or reminder postcards would lead to a larger participation rate and reduce the risk of a break in the clinical pathway.[64]

Registry innovations

Currently the Registry is designed as a basic patient invitation solution, however with greater service tracking and clinical pathway integration the Registry could improve health outcomes for older Australians by further enabling the sharing of relevant health information and coordinated holistic care.[65]

- **Service tracking and reminders** would record whether services/scans have been undertaken through MBS integration and send reminders to people involved in the Program if they are not scanned. Participation rate and follow-up rate could also be analysed through service tracking to further provide learnings for a national roll out of the Program.
- **Clinical history and pathway innovations** within the Registry could also store results & history of scans, as well as track if patients are receiving appropriate treatment and management through PBS integration (including adherence analysis). The Registry could also recommend the correct individual pathway based on the patients scan results

Accessibility in rural and remote areas

The Program needs to be accessible to all older Australians. However, this is difficult for those who live in rural or remote areas, with limited access healthcare services needed to assess a person's bone mineral density. Possible ways to support equitable access to care for those in rural areas include:

- **Telehealth** options for health care practitioners to identify a person's risk of osteoporosis remotely
- Using **mobile DXA vans**, similar to other mobile health diagnostic vehicles, to support equitable access to those in remote areas

Targeted reach

Using data to support a more targeted identification process for those eligible to participate in the Program will lead to a more efficient and effective approach.

- **Synergies with national data registries** already in place, such as the National Cancer Registry, could allow for an invitation for a BMD scan to be carried out at the same time as a female is going to carry out a BreastScreen. Synergies with My Health Record could also help to

create a more holistic picture of a person's health, and potentially better linkage of utilisation and outcomes.

- **Using the hereditary risk factor of osteoporosis**[66] as an identification marker to target others in a person's family for risk identification could lead to a larger cohort of Australians becoming aware of their osteoporosis risk. This would be carried out by sending osteoporosis information to a child if their parent has been identified as having osteoporosis through the Program as a way to raise their awareness to their risk of developing osteoporosis in the future.

Appendix D: Major assumptions for costs and benefits

Table 14: Model assumptions and sources

Input data/ assumption	*Input data/assumption definition*	*Source*
Australian population	• Population projections were based on Australian Bureau of Statistics population projections Series B, which includes assumptions regarding future fertility, mortality and migration. • The Australian population was sourced in specific gender and 10 year age cohorts over 70	Population information sourced from ABS available at: http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3222.02012%20(base)%20to%202101?OpenDocument
Incidence of disease	• Incidence of osteoporosis and osteopenia were based on the Geelong Osteoporosis Study, for the over 70 cohort ○ ***Osteopenia incidence*** ▪ ***Female: 46%*** ▪ ***Male: 59%*** ○ ***Osteoporosis incidence*** ▪ ***Female: 43%*** ▪ ***Male: 13%***	Incidence information is available on OA Burden of Disease Report Watts JJ, Abimanyi-Ochom J, Sanders KM. Osteoporosis costing all Australians A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037: 2013
Risk of a fragility fracture	• Fracture risk figures are based on the Geelong Osteoporosis Study **Hip** / **Non- hip** **Female 70+**: 1.8% / 5.0% **Male 70+**: 1.5% / 3.8% • Fracture risk for hip and non-hip fragility fractures have been based on those with a t-score of -2.5 • The average time for a secondary fracture to occur is assumed to be 1 year, with 3 times the risk of the second fracture occurring as the first fracture. • Secondary fractures on average occur within 6 months to 5 years after a person's first fragility fracture.	Fracture Incidence information is available on OA Burden of Disease Report Watts JJ, Abimanyi-Ochom J, Sanders KM. Osteoporosis costing all Australians A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037: 2013 Secondary fracture assumption based on stakeholder consultations and data available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3797000/ https://www.iofbonehealth.org/news/risk-second-major-osteoporotic-fracture-greatest-immediately-after-first-fracture
Cost of a fragility fracture	• Fragility fracture costs have been sourced from costing data produced by Osteoporosis Australia and have been separated by type of fracture	Fragility fracture costs based upon osteoporosis fracture cost data available at

<table>
<tr>
<td></td>
<td>

Fragility fracture costing has then been categorised as Hip and Non Hip (Wrist, Vertebral and Other)

<table>
<tr><th></th><th>Age</th><th>Fracture cost</th></tr>
<tr><td>Female Hip</td><td>70+</td><td>$ 38,894.11</td></tr>
<tr><td>Female Non Hip</td><td>70+</td><td>$ 12,808.55</td></tr>
<tr><td>Male Hip</td><td>70+</td><td>$ 36,561.11</td></tr>
<tr><td>Male Non Hip</td><td>70+</td><td>$ 12,764.68</td></tr>
</table>
</td>
<td>Watts JJ, Abimanyi-Ochom J, Sanders KM. Osteoporosis costing all Australians A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037: 2013</td>
</tr>
<tr>
<td>MBS costs</td>
<td>

Costs were based 2018 Medical Benefits Scheme

<table>
<tr><th>MBS item</th><th>Item number</th><th>Cost</th></tr>
<tr><td>DXA scan</td><td>12320, 12322</td><td>$ 87.04</td></tr>
<tr><td>GP visit</td><td>23</td><td>$ 37.05</td></tr>
<tr><td>Management plan</td><td>721</td><td>$ 144.25</td></tr>
<tr><td>Team care arrangement</td><td>723</td><td>$ 114.30</td></tr>
</table>
</td>
<td>MBS costs and descriptions available at
http://www9.health.gov.au/mbs/search.cfm</td>
</tr>
<tr>
<td>Treatment assumptions</td>
<td>

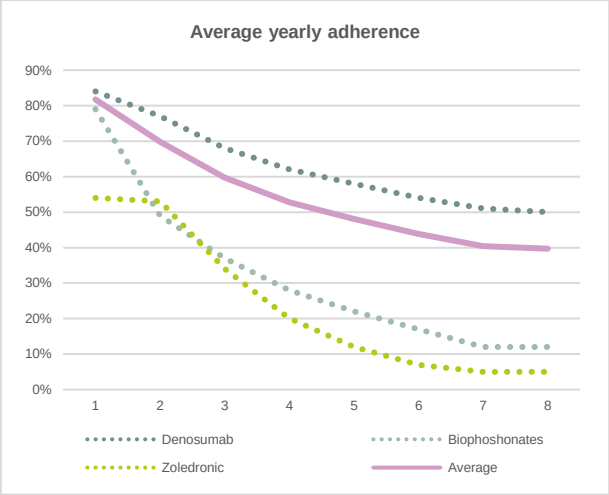
Treatment assumptions were based on 2018 osteoporosis medication

<table>
<tr><th></th><th>Average cost PA</th><th>Proportion of users in Australia</th></tr>
<tr><td>Alendronate</td><td>$225.87</td><td>12.5%</td></tr>
<tr><td>Risedronate</td><td>$426.05</td><td>9.6%</td></tr>
<tr><td>Zoledronic acid</td><td>$263.87</td><td>3.7%</td></tr>
<tr><td>Denosumab</td><td>$542.98</td><td>72.0%</td></tr>
<tr><td>Raloxifene</td><td>$538.20</td><td>2.0%</td></tr>
<tr><td>Teriparatide</td><td>$4941.60</td><td>0.2%</td></tr>
<tr><td>Average</td><td>$ 490.54</td><td></td></tr>
</table>

Fracture reduction is assumed to be 50 per cent based on SFPP submission and stakeholder input.
Adherence to treatment were based on osteoporosis medication persistence in Australia.

Adherence decreases as years of treatment increases and a weighted average was used to calculate the yearly adherence to treatment
Adherence has been applied to both treatment costs and treatment benefits

</td>
<td>Osteoporosis medication is available at
https://cdn0.scrvt.com/08ab3606b0b7a8ea53fd0b40b1c44f86/6b869eaedfa145c2/4b3bf5dd76d6/Osteoporosis-medicines-tables-revised.pdf
PBS costs and usage data is available at
http://medicarestatistics.humanservices.gov.au/statistics/pbs_item.jsp
https://www.pbs.gov.au/
https://www.ebs.tga.gov.au/ebs/picmi/picmirepository.nsf/PICMI?OpenForm&t=&q=denosumab
Adherence assumptions were based on PwC analysis of PBS data, Stakeholder consultations, and clinical trial data available at Hadji P, Papaioannou N, Gielen E, Feudjo Tepie M, Zhang E, Frieling I, Geusens P, Makras P, Resch H, Möller G, Kalouche-Khalil L, Fahrleitner-Pammer A. Persistence, adherence, and medication-taking behavior in women with postmenopausal osteoporosis receiving denosumab in routine practice in Germany,</td>
</tr>
</table>

		Austria, Greece, and Belgium: 12-month results from a European non-interventional study. Osteoporosis Int. 2015. Cheen MH, Kong MC, Zhang RF, Tee FM, Chandran M. Adherence to osteoporosis medications amongst Singaporean patients. Osteoporosis Int. 2012 Ganda K, Schaffer A, Pearson S, Seibel MJ. Compliance and persistence to oral bisphosphonate therapy following initiation within a secondary fracture prevention program: a randomised controlled trial of specialist vs. non-specialist management. Osteoporosis Int. 2014

Aged care assumptions	• Fractures can lead to admission to aged care. Aged care admissions were based on 2012 Osteoporosis Australia data
	  ○ Aged care admission risk due to a fragility fracture
	  ▪ ***Hip: 11%***
	  ▪ ***Non hip: 1%***
	• Aged care costs were based on 2018 Daily Aged Care Funding Instrument (ACFI) subsidies
	  ○ ***Daily average ACFI subsidy: $76.73***
	  ○ ***Annual subsidy: $35,226.15***
		Aged care risk based on Osteoporosis Australia data available at
		Watts JJ, Abimanyi-Ochom J, Sanders KM. Osteoporosis costing all Australians A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037: 2013
		Aged care funding information available at
		https://agedcare.health.gov.au/sites/g/files/net1426/f/documents/06_2018/aged_care_subsidies_and_supplements_from_1_july_2018.pdf

Home care assumptions	• Utilisation of home care is based on 2012 Osteoporosis Australia data
	  Hip / **Non- hip**
	  Female: 39.0% / 38.7%
	  Male: 27.0% / 13.0%
	• Home care costs were based on Home Care Subsidy rates for Levels 1 - 3
	  ○ ***Daily average subsidy: $51.50***
	  ○ ***Annual subsidy: $18,797.50***
		Home care risk based on Osteoporosis Australia data available at
		Watts JJ, Abimanyi-Ochom J, Sanders KM. Osteoporosis costing all Australians A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037: 2013
		Home care funding information available at
		https://agedcare.health.gov.au/sites/g/files/net1426/f/documents/06_2018/aged_care_subsidies_and_supplements_from_1_july_2018.pdf

<table>
<tr>
<td>Informal care assumptions</td>
<td>

Utilisation of informal care is based on 2012 Osteoporosis Australia data

<table>
<tr><th></th><th>Hip</th><th>Non- hip</th></tr>
<tr><td>Female</td><td>8.0%</td><td>18%</td></tr>
<tr><td>Male</td><td>28.0%</td><td>22%</td></tr>
</table>

Hours of care needed weekly is based on 2012 Osteoproosis Australia data, and the AusICUROS study

<table>
<tr><th>Hours p/w</th><th>Hip</th><th>Non- hip</th></tr>
<tr><td>Female</td><td>7.8</td><td>3.6</td></tr>
<tr><td>Male</td><td>4.6</td><td>3.0</td></tr>
</table>

Hours of care needed after fracture is based on reporting by Carers Australia

Cost per hour: $29.33

</td>
<td>Informal care risk based on Osteoporosis Australia data available at
Watts JJ, Abimanyi-Ochom J, Sanders KM. Osteoporosis costing all Australians A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037: 2013
Carers financial data available at
Carersaustralia.com.au. (2014). The economic value of informal care in Australia in 2015. [online] Available at: http://www.carersaustralia.com.au/storage/Access%20Economics%20Report.pdf</td>
</tr>
<tr>
<td>Health utilisation assumptions</td>
<td>

Utilisation of health services is based on 2012 Osteoproosis Australia data, and the AusICUROS study

Hospitalisations due to fracture

Hip: 94%
Non hip: 67%

Length of Stay in hospital (LoS)

Hip: 11.5 days
Non hip: 7.6 days

GP visits due to fracture

Hip: 6%
Non hip: 33%

</td>
<td>Health utilisation based on Osteoporosis Australia data available at
Watts JJ, Abimanyi-Ochom J, Sanders KM. Osteoporosis costing all Australians A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037: 2013
Information on the AusICUROS Study available at
Sanders KM, Nicholson GC, Ugoni AM, Pasco JA, Seeman E, Kotowicz MA. Health burden of hip and other fractures in Australia beyond 2000. Projections based on the Geelong Osteoporosis Study. Med J Aust. 1999;170(10):467-70.</td>
</tr>
<tr>
<td>Participation rate assumption</td>
<td>

Participation rates modelled have been based on participation rates of the other national health policy programs

BreastScreen
National Bowel Cancer Screening Program
National Cervical Screening Program

Participation rate has been modelled as

Female participation: 42%
Male participation: 37%

</td>
<td>Participation rate data is available from the Australian Institute of Health and Welfare at
https://www.aihw.gov.au/reports/cancer-screening/cancer-screening-in-australia/data</td>
</tr>
</table>

Population entry and exits assumption	• Population re-entry and exits have been modelled using osteoporosis guidelines, clinical trial data, and stakeholder consultations
	• Program re-entry
	  ○ Osteopenia diagnosis will be invited to be re-scanned within ***2 years***
	  ○ Normal BMD diagnosis will be invited to be re-scanned within ***5 years***
	• Program exit
	  ○ ***An assumed 20 per cent of those targeted will opt out of the Program***
	  ○ The opt out rate has been based on the Geelong Osteoporosis Study
	  ○ It is assumed those already being treated for osteoporosis will opt out of the Program
		Osteoporosis guidelines are available at
		https://www.racgp.org.au/your-practice/guidelines/redbook/14-osteoporosis/
		The Royal Australian College of General Practitioners and Osteoporosis Australia. Osteoporosis prevention, diagnosis and management in postmenopausal women and men over 50 years of age. 2nd edn. East Melbourne, Vic: RACGP, 2017.
		Osteoporosis progression data available at
		https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3285114/
		Opt out rate based on Geelong Osteoporosis Study
		https://academic.oup.com/ije/article/41/6/1565/740814

Inflation	• Costs have been adjusted for inflation over the 10 year model using 2018 inflation rates
	  ○ ***General inflation: 1.9%***
	  ○ ***Health inflation: 4.2%***
		Inflation rates sourced from ABS data available at
		http://www.abs.gov.au/ausstats/abs@.nsf/mf/6401.0

Abbreviation	*Definition*
BMD	Bone Mineral Density
DXA	Dual-energy X-ray Absorptiometry
MBS	Medicare Benefit Schedule
PBS	Pharmaceutical Benefit Scheme
PHN	Primary Health Network
QALYs	Quality Adjusted Life Years

Appendix E: National Osteoporosis Strategic Plan

A National Osteoporosis Strategic Plan is currently being developed by Osteoporosis Australia and key stakeholders. It is anticipated that the strategy will be finalised in March 2019 and will contain five specific priorities and multiple approaches to reducing osteoporosis risk in Australia including:

- A National Secondary Fracture Prevention Program (SFPP). The executive summary from the recent SFPP submission is provided below[xiii]
- A National Osteoporosis Risk Identification and Awareness Program (the Program in this submission)

Executive summary from SFPP submission:

Australians who have suffered an osteoporotic fragility fracture should not have to suffer further fractures that could have been prevented with appropriate care.

The Issue – costly secondary fractures could be avoided

Fragility fractures significantly impact the quality of life and ability of older people to remain independent and in the community. Major fragility fractures, such as hip and spine fractures, cause disability, institutionalisation and death and most fractures require costly medical care including emergency assistance, surgery, hospitals stays, rehabilitation and community services (such as home care). It is estimated osteoporotic fractures cost the Australian economy over $2 billion in direct costs in 2016.[67]

A significant proportion of fractures could be avoided through appropriate osteoporosis management for people who have had a fragility fracture. However, even after one or more fractures have occurred, 70 to 80 per cent of people still go undiagnosed and receive no treatment. Fragmentation across the health and ageing sectors, limited resources, and lack of awareness around secondary fracture prevention are some of the main challenges to people receiving care and treatment.

The Solution – A National Secondary Fracture Prevention Program (SFPP)

Recognising the critical role that primary care plays in the implementation of a national SFPP, we believe osteoporosis and fragility fractures represent a significant opportunity for General Practitioners to identify, diagnose and treat patients with secondary fractures. In addition, General Practitioners will be instrumental in improving the follow-up of patients discharged from hospital-based SFPPs. Therefore, primary care will assist significantly in the reduction of the costly burden of secondary fractures.

A national approach, with leadership and investment from the Australian Government and co-investment from the states and territories is needed to expand secondary fracture prevention programs (SFPP) in Australia and help prevent future fragility fracture**s, with benefits for all, across the entire health care system**

We are seeking funding of $10.45m from the Australian Government and $3.4 million from the states and territories to support a National Secondary Fracture Prevention Program pilot including:

[xiii] The full National Secondary Fracture Prevention Program Budget Submission is available on the Federal budget website

- **Ten pilot sites** across the country to design and develop local community/primary care-based secondary fracture prevention services that build on, and are integrated with, the hospital-based fracture liaison service (FLS) models.
- Each pilot location would include hospital and community/primary care-based teams, including General Practitioners. Pilot teams would work together to co-design an integrated approach including considerations on how to identify and treat as many people as possible, how to share information in a better way and test if innovative approaches are appropriate.

  An investment by the federal government into primary care to enable General Practitioners to effectively identify patients with fragility fractures, diagnose and treat their osteoporosis, as well as follow up patients discharged from the hospital-based pilot SFPPs.

- **National enablers** that will provide leadership and support for a more consistent, efficient and effective approach to secondary fracture prevention in Australia. This would include a national leadership committee, a national registry, electronic record fracture identification tools and awareness and communication campaigns.
- **A national policy for secondary fracture prevention** to be developed using insights from the pilots, in consultation with the National Leadership Committee and to be endorsed through the Australian Health Minister's Advisory Council.

The Outcomes – avoided fractures and costs to the health and ageing sectors

The potential benefits of a National Secondary Fracture Prevention Program would be considerable and would provide the Australian health and ageing sectors with a number of important economic and societal benefits each year. If 60 per cent of people with fragility fractures are identified and treated per year at the pilot sites, it is estimated that over 2,700 secondary fractures will be avoided per year leading to an estimated benefit (through avoided direct health and aged care costs) of $48.1m and a benefit cost ratio of 3.5, expected to be realised within a three-year period. Avoiding unnecessary secondary fragility fractures will improve the lives of thousands of older people and help them to remain independent and in the community longer.

Appendix F: National Strategic Framework for Chronic Conditions

The Program is aligned to the National Strategic Framework for Chronic Conditions (the Framework), and is especially relevant in promoting early detection, appropriate chronic disease management, and improving Australians health outcomes and their quality of life. A summary of the Strategic Priority Areas of the Framework and how this Program aligns to the Framework can be seen in Table 13. The summary indicates that the Program (and Pilot) represent an opportunity to take action within this Framework.

Table 15: Objectives of the National Strategic Framework for Chronic Conditions

Objective		Strategic Priority Area	How the program aligns to the Priority of The Framework
Objective 1: *Focus on prevention for a healthier Australia*	1.3	**Critical life stages**	The Program targets the Priority Population of older Australians and understands that critical points in life, such as retirement, can be a catalyst for deteriorating health and wellbeing.
	1.4	**Timely and appropriate detection and intervention**	The Program encourages appropriate detection and identification of osteoporosis (a chronic condition) by engaging with people and health professionals to increase the number of older Australians being aware of their bone health. Encouragement of timely and appropriate detection and intervention will result in fewer avoidable hospitalisations, improved health outcomes, and an improved quality of life for those suffering osteoporosis.
Objective 2: *Provide efficient, effective and appropriate care to support people with chronic conditions to optimise quality of life*	2.2	**Continuity of care**	The Program emphasises the need for an integrated patient centric health system, with communication between primary and tertiary care. The Registry will be integral in enabling secure communication and coordination of care through the patient pathway, from invitation, to scanning, diagnosis, treatment and management.
	2.3	**Accessible health services**	The Program articulates the need for accessible services for equitable impact across Australia. The use of mobile DXA vans and telehealth options could allow for more people across Australia to have access to the Program.
	2.4	**Information sharing**	The Program will utilise My Health Record and the information collected by the Registry (with patients consent) to enable effective sharing of relevant health information to improve continuity of care and overall health outcomes across primary, tertiary and aged care.

	2.5	**Supportive systems**	The Program is designed to support people with osteoporosis and encourage appropriate treatment and management. Coordinated care and support will meet the needs of people with osteoporosis and reduce access barriers to appropriate identification and management.
Objective 3: Target priority populations	3.2	**Action and empowerment**	The Program will reduce the risk of osteoporosis becoming more severe in older Australians. The Program is designed to utilise flexible service delivery to be available to older Australians, and those in rural and remote areas with the use of DXA vans and telehealth options target those with access barriers.

Appendix G: References

[1] Based on PwC analysis of 2017 MBS statistics, population data and osteoporosis rates sourced from Osteoporosis Australia analysis: Watts JJ, Abimanyi-Ochom J, Sanders, KM. Osteoporosis costing all Australians. A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037:2013.

[2] Australian Health Ministers' Advisory Council. (2017). National Strategic Framework for Chronic Conditions. Australian Government. Canberra.

[3] Based on ABS population projections and osteoporosis incidence rates based on the Geelong Osteoporosis Study, Henry MJ, Pasco JA, Nicholson GC, Kotowicz MA. Prevalence of osteoporosis in Australian men and women: Geelong Osteoporosis study. Med J Aust. 2011;195(6);321-2

[4] Watts JJ, Abimanyi-Ochom J, Sanders, KM. Osteoporosis costing all Australians. A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037:2013.

[5] Geelong Osteoporosis Study, Henry MJ, Pasco JA, Nicholson GC, Kotowicz MA. Prevalence of osteoporosis in Australian men and women: Geelong Osteoporosis study. Med J Aust. 2011;195(6);321-2

[6] Osteoporosis National Action Plan Working Group, Osteoporosis National Action Plan 2016, Sydney, 2016. Available from: https://www.osteoporosis.org.au/sites/default/files/files/Osteoporosis%20National%20Action%20Plan%202016.pdf

[7] Based on ABS population projections and osteoporosis incidence rates based on the Geelong Osteoporosis Study, Henry MJ, Pasco JA, Nicholson GC, Kotowicz MA. Prevalence of osteoporosis in Australian men and women: Geelong Osteoporosis study. Med J Aust. 2011;195(6);321-2

[8] Osteoporosis National Action Plan Working Group, Osteoporosis National Action Plan 2016, Sydney, 2016. Available from: https://www.osteoporosis.org.au/sites/default/files/files/Osteoporosis%20National%20Action%20Plan%202016.pdf

[9] Based on PwC analysis of 2017 MBS statistics, population data and osteoporosis rates sourced from Osteoporosis Australia analysis: Watts JJ, Abimanyi-Ochom J, Sanders, KM. Osteoporosis costing all Australians. A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037:2013.

[10] Based on PwC analysis of ABS population projections and fracture rates sourced from Osteoporosis Australia analysis: Watts JJ, Abimanyi-Ochom J, Sanders, KM. Osteoporosis costing all Australians. A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037:2013.

[11] Based on ABS population projections and osteoporosis incidence rates based on the Geelong Osteoporosis Study, Henry MJ, Pasco JA, Nicholson GC, Kotowicz MA. Prevalence of osteoporosis in Australian men and women: Geelong Osteoporosis study. Med J Aust. 2011;195(6);321-2

[12] Henry MJ, Pasco JA, Nicholson GC, Kotowicz MA. Prevalence of osteoporosis in Australian men and women: Geelong Osteoporosis study. Med J Aust. 2011;195(6);321-2

[13] Osteoporosis Australia Medical & Scientific Advisory Committee (2017). Risk factors | Osteoporosis Australia. [online] Osteoporosis.org.au. Available at: https://www.osteoporosis.org.au/risk-factors.

[14] Based on ABS population projections and osteoporosis incidence rates based on the Geelong Osteoporosis Study, Henry MJ, Pasco JA, Nicholson GC, Kotowicz MA. Prevalence of osteoporosis in Australian men and women: Geelong Osteoporosis study. Med J Aust. 2011;195(6);321-2

[15] Watts JJ, Abimanyi-Ochom J, Sanders, KM. Osteoporosis costing all Australians. A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037:2013.

[16] Based on ABS population projections and fracture rates sourced from Osteoporosis Australia analysis: Watts JJ, Abimanyi-Ochom J, Sanders, KM. Osteoporosis costing all Australians. A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037:2013.

[17] AIHW (Australian Institute of Health and Welfare) 2010. The problem of osteoporotic hip fracture in Australia. Bulletin no. 76. Cat. No AUS 121. Canberra: AIHW.

[18] Ibid.

[19] Based on Osteoporosis Australia analysis on the cost of fractures adjusted for inflation to be reflective of 2018 costs, Watts JJ, Abimanyi-Ochom J, Sanders, KM. Osteoporosis costing all Australians. A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037:2013.

[20] Watts JJ, Abimanyi-Ochom J, Sanders KM. (2013). Osteoporosis costing all Australians A new burden of disease analysis – 2012 to 2022. Glebe, NSW 2037:

[21] ANZHFR Annual Report 2017. http://anzhfr.org/wp-content/uploads/2017/08/ANZHFR-Annual-Report-2017.pdf. Accessed 27 November 2017

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[25] Based on 2017 MBS statistics

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[28] Hockey, J. 2015 Intergenerational Report, Australia in 2055.

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