

## **Osteoporosis Australia Submission to McKeon Review, March, 2012.**

### **Summary**

Osteoporosis Australia is a not-for-profit organisation that aims to improve awareness of the disease, reduce fractures and improve bone health in the community.

Osteoporosis is a serious chronic musculoskeletal disease that reduces bone strength, leading to painful and debilitating fractures and high mortality rates. Strong bones are essential to good health and independence, and yet they are often taken for granted. New figures suggest the disease is far more prevalent previously thought, with over 6.6 million affected by fragile bones. With the population ageing, this prevalence is expected to rise even further, placing enormous burden on the health and aged care sector.

The main points of Osteoporosis Australia's submission are that:

- 1) Australia is an international leader in the bone research field. A viable health and medical research sector enables Australia to prioritise areas most relevant to it and its region. It creates employment opportunities in a value-adding sector and builds intellectual capital that can be used for commercial opportunities that might otherwise occur off-shore.
- 2) Government funding for research needs to increase, particularly in areas of long-term research such as basic science, and in diseases of aging in response to the impacts of the aging population. More opportunities should be created to encourage corporate and philanthropic investment in non-commercial research through matched government support or other incentives.
- 3) Research funding from NH&MRC should be increased to adequately address the increase in health and aged care expenditure projected due to the chronic diseases which constitute the NHPAs, which include musculoskeletal conditions like osteoporosis. These projections substantially underestimate the current and future disease prevalence of osteoporosis and we must invest now to mitigate the future impact.
- 4) Australia can implement its research outcomes more effectively by addressing some of the most immediate barriers to uptake. Some measures could include: better linkages between research and service delivery, improved out-of-hospital services for disease management, and additional support for the communication of research outcomes to health sector professionals and the community.

#### **About Osteoporosis Australia**

Osteoporosis Australia is a not-for-profit organisation that aims to improve awareness of the disease, reduce fractures and improve bone health in the community. Osteoporosis Australia

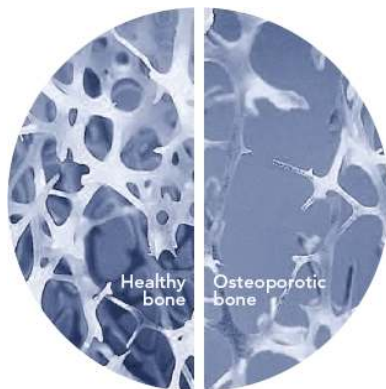
focuses on the following key objectives:

- Increase awareness of osteoporosis throughout Australia
- Improve prevention and management strategies
- Increase GP and other health professionals understanding of osteoporosis
- Act as an effective lobby voice in federal Government
- Fund research in bone metabolism and related issues.

## About Osteoporosis

Strong bones are essential to good health and independence, and yet they are often taken for granted. Osteoporosis is a serious chronic musculoskeletal disease that reduces bone strength, leading to painful and debilitating fractures and high mortality rates. Osteoporosis is called a “silent disease” as there are often no obvious external symptoms, and is commonly diagnosed after a fracture occurs when the damage is done.

Osteoporosis occurs when bones lose minerals such as calcium more quickly than the body can replace them and reduces bone thickness (bone mass or density). As a result, bones become thinner and more porous so that even a minor bump or accident can cause serious fractures. These are known as ‘fragility’ or ‘minimal trauma’ fractures.



Any bone can be affected by osteoporosis, but the most common sites are bones in the hip, spine, wrist, ribs, pelvis and upper arm. Osteoporotic fractures can lead to deformity of the spine, changes in posture/loss of height, and muscle weakness. This has serious impacts on the quality of life of sufferers such as chronic pain, disability, loss of independence, and even premature death.

Osteoporosis is common in Australia and affects men and women. New studies released in September 2011 have shown that the prevalence of fragile bones is more widespread than previously thought<sup>1</sup>.

Over 1.2 million people have the disease and a further 5.4 million are affected by osteopaenia (low bone density and a potential precursor to osteoporosis). It’s a costly disease with an annual direct impact of almost \$2 billion due to fractures resulting in surgery, hospital stays, rehabilitation, and homecare. An ageing population is expected to see this figure increase dramatically unless action is taken now.

Osteoporosis is often viewed as an issue affecting only the elderly in the community although the disease can occur much earlier in life. In reality, the prevalence and severity of the disease in later life is significantly influenced in the early years to middle-age, where the majority of our bone strength and healthy lifestyle habits are acquired. For this reason, the research agenda also includes a significant emphasis on early diagnosis and prevention.

<sup>1</sup> Henry, M.J., Pasco, J.A., Nicholson, G.C., and Kotowicz, M.A. Prevalence of osteoporosis in Australian men and women: Geelong Osteoporosis Study Med J Aust; 195 (6): 321-322. September 2011

The importance of research in combating the disease is widely overlooked. Australia has some of the leading institutions and experts in the international bone research field. There have been significant advances over the last 20 years in the diagnosis, treatment, and prevention of fragile bones. Despite this exciting progress and osteoporosis being identified as a 'National Health Priority' since 2002, osteoporosis research receives a relatively small amount of the overall medical research investment in Australia.

### **The critical role of medical research into bone**

Australia has a rich history in breakthrough research into osteoporosis. Some of the most important advances both locally and internationally in the past 20 years have included:

- The development of therapeutic drugs which remain one of the primary treatment options
- The development of improved diagnostics to more accurately predict the onset of osteoporosis
- Understanding the role of vitamin D in calcium absorption which has led to improved dietary supplements and testing for deficiency
- Identifying particular exercises can impact on bone density; and
- Understanding that micro-architecture of bone is vitally important for understanding bone decay.

These advances have informed awareness and prevention programs that have seen a reduction in the incidence of hip fractures in Australia by 20%<sup>2</sup>. This has been made possible because of investment in research, but much more needs to be done if we are to arrest the escalation in prevalence in Australia.

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<sup>2</sup> Australian Institute of Health and Welfare 2009.

Question 1) Why is it in Australia's interest to have a viable, internationally competitive health and medical research sector?

Australia faces many challenges in the face of the changing global economy and its impact on the traditional workforce. There is a strong opportunity for Australia to capitalise on its previous investment in health and medical research which has given it comparative advantages in the form of; a highly trained and skilled researchers, world class research facilities and educational institutions, a world class and responsive hospital system and health industry whereby knowledge can be rapidly disseminated. Australia has some of the leading researchers in the bone health field. To maintain this leading position we need to ensure that there is a rewarding career path that will retain our current expertise and foster the next generation of investigators.

Australia can better exploit the commercial outcomes of research outcomes to capitalise on the intellectual property developed. This could capture the value that might otherwise accrue offshore, for example to international pharmaceutical companies in the area of therapeutic drug development.

A competitive local industry enables the cost effective investment in areas most relevant to the Australian population. Australia has unique needs, and research needs to be conducted in situ with ready access to the end-user. If of sufficient scale, a competitive local industry is also well positioned to address global issues and grow a viable export industry. The incidence of disease in developing countries in Asia presents an opportunity to assist developing nations, in addition to a readily accessible export market for locally developed solutions.

Australia's world class health system gives a strong platform for meaningful careers in health and medical research. Where global trends are seeing employment prospects diminishing in more traditional manufacturing and other labour intensive industries, it is vital that Australia cultivate knowledge-based industries, particularly those where it already has a comparative advantage. It is concerning that in international terms Australia's investment is slipping as other OECD countries recognise the economic benefits of investment in health and medical research, and developing countries begin to invest<sup>3</sup>.

Australia has enormous challenges ahead of it in addressing the projected impacts on the health system based on the likely trends in disease and injury<sup>4</sup>. As health solutions become more complex and costly and, most importantly, the sheer burden of the increasing population over 60 increases, Musculoskeletal disorders are projected to increase from approximately \$6.3 billion to \$14.2 billion between 2012 and 2032. Osteoporosis Australia is also concerned that osteoporosis, a significant component of the musculoskeletal disease NHPA costs, is significantly under-diagnosed based on recent studies<sup>5</sup>. As more of the at-risk population is subjected to bone density scanning then these costs are likely to significantly increase. Australia needs to find ways to keep the costs under control through preventative strategies that enable

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<sup>3</sup> Research Australia. "Shaping Up: Trends and Statistics in Funding Health and Medical Research", p12-13, July 2011.

<sup>4</sup> Australian Institute of Health and Welfare "Projection of Australian Health Care Expenditure by Disease, 2003-2033

<sup>5</sup> Henry, M.J., Pasco, J.A., Nicholson, G.C., and Kotowicz, M.A. Prevalence of osteoporosis in Australian men and women: Geelong Osteoporosis Study Med J Aust; 195 (6): 321-322. September 2011.

people to live independently. Australia needs to ensure that it invests now so that it has the capacity in terms of personnel, infrastructure and funding to match the scale of the disease prevalence projections.

Question 2) How might health and medical research be best managed and funded in Australia?

Australia needs to ensure it invests in health and medical research appropriately by focusing on the areas that will most benefit national health and wellbeing, such as the National Health Priority Areas (NHPAs). Much of the health and medical research has been funded by the NH&MRC has had significant annual growth for approximately 10 years, but the overall level of expenditure is falling in comparison to other OECD nations<sup>6</sup>, and emerging economies are beginning to invest significantly.

Growth in NH&MRC funding across NHPAs has not been uniform. For example musculoskeletal research funding has increased approximately 3.2% per annum to \$30 million in 2011, in comparison to cancer research increased by 8.6% per annum to \$175 million over the same period despite having a comparable impact on health expenditure. Osteoporosis Australia calls for an increase in the NH&MRC budget to fast track NHPAs that have fallen behind. Success rates for NH&MRC applications remain at approximately 25%, which means that much worthy research remains unfunded. Government, private enterprise and philanthropic organisations all have a role to play, as described below.

### Government

Osteoporosis Australia is calling for an increase the budget for NH&MRC research funding to maintain Australia's competitive advantage in health and medical research and address the projected increase in the incidence of chronic diseases such as osteoporosis. It is not clear that the current funding adequately reflects the likely future burden of disease and health system expenditure within its distribution of funds across the NHPAs. In fact, forecast expenditure<sup>7</sup> shows significant growth in chronic diseases, especially those associated with aging. Current expenditure on health R&D needs to increase in areas in response to the forecast health expenditure on chronic diseases to arrest the trend.

The health expenditure on musculoskeletal diseases is a good example as the current investment on health R&D has fallen over the past 5 years from 5.5% in 2007 to approximately 3.7% of the NH&MRC budget in 2011<sup>8</sup>. This is in contrast to the proportion of health expenditure on musculoskeletal diseases which was approximately 5.2% (\$2.7 billion in 2002-03) and is forecast to increase to \$6.3 billion in 2012-13 and to \$14.2 billion by 2032-33<sup>9</sup> or 5.8% of health system expenditure.

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<sup>6</sup> Research Australia. "Shaping Up: Trends and Statistics in Funding Health and Medical Research", p13, July 2011.

<sup>7</sup> Australian Institute of Health and Welfare "Projection of Australian Health Care Expenditure by Disease, 2003-2033

<sup>8</sup> NH&MRC Statistics – Funding for National Health Priority Areas 2002-2011.

<sup>9</sup> Australian Institute of Health and Welfare "Projection of Australian Health Care Expenditure by Disease, 2003-2033

Osteoporosis Australia would also like to see significant investment in longer term studies. There are aspects of diseases of aging that need to be examined in real time, and are not appropriate to simulate using other techniques such as animal models. Local studies such as the Dubbo Osteoporosis Epidemiology Study (Garvan Institute) are internationally recognised studies however it is difficult to secure funding over the long time frames from traditional NH&MRC channels.

### Philanthropy and private sector support

Areas of health and medical research receive varying degrees of support from philanthropic sources. This support tends to favour causes with a more public profile and where there are a greater number of charities operating, eliciting more corporate sponsorship and public donations, This not to detract from these worthy causes, which include organisations addressing cancer, cardiovascular and child-related illnesses, but noting that there is less opportunity for research areas like musculoskeletal diseases to leverage philanthropic funding. For these reasons musculoskeletal disease research remains primarily reliant on NHMRC funding and it might be prudent to consider additional funding to fast track research into areas that have high forecast growth in expenditure.

Private sector support and philanthropic funding are important sources of project funds for health research however these typically have very short funding windows which are not conducive to longer term projects or basic science projects. Osteoporosis Australia wishes to see more opportunities to contribute to longer term project funding, for example, leverage philanthropic funding with matching public sources which will create opportunities to establish endowment funds which are more conducive to long-term research. Another option would be to consider creating a coordinated research agenda on high prevalence chronic diseases such as musculoskeletal diseases where such an agenda does not currently exist, and look for opportunities to bring in industry partners, perhaps using the Cooperative Research Centre model.

### Leveraging Government support

There is potential for the Government to better leverage its funding through supporting community awareness program and public health campaigns. This is a vital but necessary step in disseminating research findings which is beyond the reach of most not-for-profit organisations. What is less considered is the role these campaigns could play stimulating further fundraising which leverages this government support. Building public awareness and engagement provides a platform for further fundraising from individuals and philanthropic organisations which, in turn, also attracts corporate support.

Question 3) What are the health and medical research strategic directions and priorities and how might we meet them?

Osteoporosis Australia's position is that Australia must address the factors that underpin the projected increases in incidence and health expenditure costs of disease and injury. This includes; targeting the high impact diseases, implementing preventative strategies, building better prospects for careers in health and medical research, and enhancing the efficacy of current research outcomes.



In terms of current expenditure on medical research, Osteoporosis Australia believes that musculoskeletal diseases remain substantially underfunded relative to their impact on current direct health expenditure, and with reference to the current and projected prevalence. For example, musculoskeletal conditions were the third highest area of expenditure in 2004-05, accounting for approximately \$4 billion, behind cardiovascular diseases and mental disorders but marginally higher than cancers. The comparable investment in research demonstrates the apparent disparity, as noted in the table below, for the top four areas of health expenditure on NHPAs.

National Health Priority Areas	Prevalence 2007-08 <sup>10</sup>	Direct Health expenditure 2004-05 <sup>11</sup>		Future expenditure 2033 <sup>12</sup>	NH&MRC Funding <sup>13</sup>	
		Total \$ billion	Research \$ million		Health and aged care \$ billion	2007 \$ million
	000s					
Cardiovascular	3,383	5.9	164	22.6	73	107
Mental	2,310	4.1	148	12.1	33	60
Musculoskeletal	6,346	4.0	92	14.2	26	30
Neoplasms	368	3.8	378	10.1	116	175
Injuries	n/a	3.4	14	14.4	24	36
Diabetes	818	1.0	55	8.6	45	72

Also included in the table above is diabetes. It is encouraging to note that a condition such as diabetes, while not having as significant impact on health expenditure now as other conditions has received significant growth in support substantially in response to the projected incidence of the disease as the population ages and the enormous impact this will have in the future. This is an appropriate response and one which Osteoporosis Australia would proposed should be replicated for other

Australia is facing steep increases in expenditure on disease and injury much of which is as a consequence of an ageing population and increasingly complex medical treatments. It should be a clear priority to invest in health and medical research that targets those conditions with the greatest impacts on future health and aged care expenditure. This is particularly true of those conditions which are already National Health Priority Areas as exhibited in the projections for expenditure on disease<sup>14</sup>.

Musculoskeletal diseases such as osteoporosis are a significant component of this, and more recent studies suggest the prevalence is far higher than previously thought. Osteoporosis is unfortunately often undiagnosed prior to the occurrence of a fracture. There is much opportunity

<sup>10</sup> 43640DO003\_20072008 National Health Survey: Summary of Results, 2007–2008 (Reissue)

<sup>11</sup> Australian Institute of Health and Welfare “Health system expenditure by on disease and injury in Australia, 2004-2005”

<sup>12</sup> Australian Institute of Health and Welfare “Projection of Australian Health Care Expenditure by Disease, 2003-2033”

<sup>13</sup> NH&MRC Statistics – Funding for National Health Priority Areas 2002-2011.

<sup>14</sup> Australian Institute of Health and Welfare “Projection of Australian Health Care Expenditure by Disease, 2003-2033”

for research in early diagnosis and management of the disease. Improved diagnostic devices and techniques combined with programs targeting the population at-risk would enable intervention prior to the occurrence of the first fracture. This would significantly mitigate admitted hospital costs, which represent approximately 27% of the expenditure on musculoskeletal diseases, and have a follow beneficial impact on avoided aged care costs which represent approximately 16% of the total forecast expenditure<sup>15</sup> based on figure for 2012-13. It is a clear social benefit to enable Australians to live independently longer, and early diagnosis to enable pre-fracture treatment is a key priority.

Osteoporosis Australia is concerned that the prevalence predictions underpinning the expenditure forecasts significantly understate the actual incidence of some chronic diseases, of which osteoporosis is one example. The Australian Bureau of Statistics<sup>16</sup> in 2007–2008 estimated the prevalence to be approximately 700,000 Australians with osteoporosis however more recent estimates in 2011<sup>17</sup> have this number at 1.2 million Australians affected by osteoporosis, with a further 5.4 million affected by fragile bones which may further progress to osteoporosis over time. This latter category, known as osteopaenia, is a greater contributor to the number of fractures due to fragile bones than osteoporosis and therefore a material component of the health expenditure although substantially unrecognised in chronic disease statistics. The nature of the development of osteoporosis is that, unlike many other chronic diseases, it is far more likely to be missed in its early stages, like osteopaenia, as it has no obvious symptoms. As diagnostic techniques improve it is expected that diagnosis rates will increase and, as the population ages, the number of patients developing osteoporosis will escalate.

It is imperative that Australia enacts preventative strategies now to mitigate the projected future expenditure on chronic diseases, and particularly where such projections are in all likelihood vastly understated. There is considerable evidence to suggest that programs targeted at youth, where the majority of bone development occurs, can have a profound impact on the peak bone mass developed by individuals which provides a strong barrier against the development of fragile bones. Fundamental research is uncovering the basic mechanism of bone formation and deterioration and is a vital input into preventative programs, for example those that ultimately inform programs promoting optimum diet, nutrition and exercise. Osteoporosis Australia would promote research targeted at early prevention.

Australia needs to ensure that it builds capacity in the health and medical research sector by improving longer-term career prospects. This can be enhanced through better funding for health and medical research, and using the current health reform processes to create research positions in clinical scenarios, such that there are closer linkages between health and medical research and the end users. Incentives such as remuneration top-up programs, accelerated tax incentives for research positions should also be considered.

There are opportunities for research into more effective health services leading to greatly improved health and economic outcomes. For example, internationally recognised studies in

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<sup>15</sup> Australian Institute of Health and Welfare “Projection of Australian Health Care Expenditure by Disease, 2003-2033

<sup>16</sup> 43640DO003\_20072008 National Health Survey: Summary of Results, 2007–2008 (Reissue)

<sup>17</sup> Henry, M.J., Pasco, J.A., Nicholson, G.C., and Kotowicz, M.A. Prevalence of osteoporosis in Australian men and women: Geelong Osteoporosis Study Med J Aust; 195 (6): 321-322. September 2011.



Australia have shown that fracture management services that greatly reduce the incidence of recurrent osteoporotic fractures at a fraction of the cost of hospitalisation and rehabilitation<sup>18 19</sup>. These health services target individuals who have already experienced low-impact fractures, who are known to have a 50% likelihood of experiencing a recurrent fracture and loss of independence, and a 20% mortality rate within 12 months.

Question 4) How can we optimise translation of health and medical research into better health and wellbeing?

Australia can implement its research outcomes more effectively by addressing some of the most immediate barriers to uptake. Some measures could include: better linkages between research and service delivery, improved out-of-hospital services for disease management, and additional support for the communication of research outcomes to health sector professionals and the community.

Health and medical research is often conducted under controlled conditions, which are not fully reflective of the challenges in clinical practice. Better translation could be achieved through better linkages to the end user, for example, the research positions at the clinical level described above which would better evaluate the efficacy of implementation in practical conditions and inform the future research priorities. This could also build in more systematic data collection of the impact of health services to improve policy and identify and address impediments to uptake of research findings and new clinical guidelines. The existing health reforms as an opportunity to build opportunities to conduct and monitor research at the local level.

Improved out-of-hospital health services could, for example, include fracture liaison services to manage osteoporosis and prevent future fractures. These would also provide a communication channel to rapidly implement outcomes from new research into practice, and may be a cost effective augmentation of existing liaison services.

Health and medical research funding does not fund the implementation of its findings, and further financial support is required for allied public health campaigns to support uptake. Mass media communication programs are beyond the financial capacity and remit of most not-for-profit organisations dedicated to health and medical research, yet motivating the community to action is a critical element of prevention or early intervention strategies. Osteoporosis, as part of the musculoskeletal National Health Priority Area, is a chronic disease that has been identified as having a high current and projected impact on health expenditure. Osteoporosis Australia is the only national organisation focused on this chronic disease. The relevant Government departments need to recognise that not-for-profit organisations have different levels of resources and that some chronic diseases do not attract material levels of public donations, and therefore remain primarily dependent on government funding.

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<sup>18</sup> Seibel, M.J.. No more excuses: fracture liaison services work and are cost-effective. *Med J Aust* 195 (10): 566-567. November 2011

<sup>19</sup> Cooper, M.S., Palmer, A.J., Seibel, M.J. Cost-effectiveness of the Concord Minimal Trauma Fracture Liaison service, a prospective, controlled fracture prevention study. *Osteoporosis Int* 2012, Volume 23, Number 1, pp 97-107.

Chronic musculoskeletal diseases such as osteoporosis do not have a nationally coordinated research or action agenda and there is the opportunity to create such a dedicated research fund, in order to lead to greater national and international collaborative efforts.