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Ms Louise Sylvan
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Dear Louise

CONSULTATION DRAFT – NATIONAL PREVENTIVE HEALTH RESEARCH STRATEGY (2012-2016)

Thank you for the opportunity to comment on the Australian National Preventive Health Agency's National Preventive Health Research Strategy (2012-2016).

Alzheimer's Australia embraces a collaborative, evidence-based approach to chronic disease preventive health research, policy and program development.

There is now compelling evidence that certain lifestyle and biomedical risk factors affect dementia risk. There is commonality between most of these factors and those for other chronic diseases. What is urgently needed is further epidemiological and intervention research.

With there being no cure for dementia, preventive research is needed to help address the rising numbers of dementia.

Alzheimer's Australia commends the Agency's approach to developing a research strategy with the goal of enabling Australians to lead healthy productive lives to their full capacity.

The attached submission highlights the research priorities as identified by Alzheimer's Australia.

I welcome the opportunity of being able to provide further assistance to the Agency in the development of the Strategy.

Yours sincerely
Glenn Rees

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TALKING ABOUT ALZHEIMER'S ACROSS AUSTRALIA
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NATIONAL PREVENTIVE HEALTH RESEARCH STRATEGY 2012-2012

Submission by Alzheimer's Australia

Alzheimer's Australia welcomes the opportunity to comment on the Australian National Preventive Health Agency's National Preventive Health Research Strategy.

Alzheimer's Australia supports the Strategy's role of enabling Australians to lead healthy productive lives. Importantly, there is a need to address one of our greatest fears and contributor to burden of disease: the loss of our cognitive health.

There is no cure for dementia – yet. However, there is a substantial and growing body of evidence for a range of modifiable risk and protective factors – many common to a range of other chronic diseases – that can be addressed by preventive health programs to decrease rates of onset and progression of dementia at the population level. Incorporating dementia into the Agency's research focus will facilitate a more comprehensive multidisciplinary framework for future preventive health research and strategy.

As at 10 August 2012, dementia was made a National Health Priority Area by the Australian Health Ministers' Advisory Committee. This means that dementia has now been recognised as a chronic disease and not simply a natural part of ageing. Dementia is an issue for people of all ages and not only older people. This is complemented by new Australian Government funding towards Alzheimer's Australia's national dementia risk reduction and brain health program from 2012/13 to 2014/2015.

Alzheimer's Australia understands that the Agency's initial research focus is directed at the key risk factors of obesity (including nutrition and physical inactivity), harmful use of alcohol and tobacco. While these key factors are significant contributors to the burden of preventable chronic disease in Australia, including dementia, consideration should be given to broadening the Agency's priorities for the 2012-16 Research Strategy.

There is compelling evidence that a healthy, mentally stimulating and physically active lifestyle and prevention or control of vascular risk factors are associated with better cognitive function and lower dementia risk.

Along with acting on what we know now to help reduce the risk of dementia, we need to prioritise investment in research that will enhance our understanding of dementia risk, protective factors and intervention strategies which will lead to policies and programs focussed on changing modifiable risk factors at a population level. Where risk and protective factors for dementia are common to multiple chronic diseases (diet, for example), preventive health research addressing outstanding questions has the potential for broad impact and multiple dividends.

In identifying research priorities for the National Preventive Health Research Strategy, Alzheimer's Australia has looked at ten well-established risk and protective factors for dementia, and considered:

- The strength of the current evidence in relation to dementia, and how much more evidence is required; and
- The number of other chronic diseases associated with each risk factor

We have also identified specific factors that have been identified in the literature as potential risk or protective factors, with more evidence required.

Specific Risk Factors

The following table lists ten well-established modifiable risk factors for dementia and describes the strength of the evidence supporting them, and their association with other chronic diseases (based primarily on the AIHW risk factor report[4]). The strength of evidence for these risk factors for dementia is given a rating between 0 and 5 (where 0 = no evidence and 5 = very strong evidence).

Dementia Risk Factor	Strength of Evidence	Linkages to other Chronic Diseases*
Diet	**2** Healthy diet at mid-life associated with lower risk	Ischaemic heart disease, stroke, type 2 diabetes, kidney disease
Hypertension	**3.5** Untreated mid-life high BP associated with increased risk	Ischaemic heart disease, stroke, kidney disease
High Cholesterol	**3.5** Untreated mid-life high-cholesterol associated with increased risk	Ischaemic heart disease, stroke
Body Weight	**3.5** Midlife obesity and underweight associated with increased risk	Ischaemic heart disease, stroke, type 2 diabetes, kidney disease
Blood Glucose/ Diabetes	**3** Diabetes a known risk factor, moderate-high blood glucose a potential risk factor	Impaired glucose regulation is most common in people who have other risk factors for diabetes or cardiovascular disease, including being overweight or obese, being physically inactive, having high cholesterol and high blood pressure levels †[i]
Smoking	**4** Current smoking associated with increased risk	Ischaemic heart disease, stroke, type 2 diabetes, kidney disease
Physical Activity	**4** Regular exercise at all ages, and specific exercise in later life associated with lower risk	Ischaemic heart disease, stroke, type 2 diabetes, kidney disease
Alcohol	**2** Excessive alcohol consumption	Stroke
Social Activity	**3** Higher social interaction in late life associated with lower risk	Associations with mental health and all-cause mortality†[ii]
Lifetime Mental Activity	**4** Lifetime mental activity associated with lower risk. Insufficient evidence about targeted activity in later life	Education and SES associated with lower risk for many chronic diseases†[iii]

* Based on AIHW (2012) *Risk Factors Contributing to Chronic Disease*[iv], except where noted by †

Recommended Priority Preventive Health Research Areas

Based on the current state of the evidence regarding dementia risk and protective factors, and the associations with other chronic diseases, Alzheimer's Australia recommends that the National Preventive Health Research Strategy should prioritise epidemiological and intervention research addressing the following key areas:

1. Diet

Several studies have found that Mediterranean and other healthy diets characterised by higher consumption of fruits, vegetables, fish, nuts and legumes and lower consumption of meat, high-fat dairy and sugar is associated with lower risk of dementia[v,vi]. Longitudinal studies have also found that healthy diet at mid-life is associated with significantly reduced risk of dementia in later life[vii]. However, evidence linking specific foods, vitamins (including Vitamin B and E), dietary fats (Omega 3, coconut oil) or other nutritional components (antioxidants) to dementia risk remains inconclusive.[viii] It is also unclear if dietary changes in later life might reduce dementia risk. Further targeted research on a range of dietary factors and dementia risk are likely to result in significant contributions to strategies aimed at reducing the risk of dementia and other chronic diseases.

2. Hypertension

Hypertension has been found to be associated with increased dementia risk[ix] (a recent study estimated 5% of Alzheimer's disease may be attributed to midlife hypertension[x]). However, other research suggests an age-dependent relationship between hypertension and dementia risk, with midlife hypertension associated with increased risk, and late-life hypertension associated with lower risk.[xi] Both longitudinal and clinical trials have shown that antihypertensive treatment can significantly reduce the risk of dementia for those with high blood pressure.[xii]

3. Cholesterol

There is mixed evidence around cholesterol and dementia risk. Several studies and meta-analyses show that high mid-life serum cholesterol is associated with an increased risk of dementia (especially Alzheimer's disease)[xiii], while other studies have failed to show a relationship between late-life cholesterol and dementia risk,[xiv] or an increase in dementia risk as a result of reduced cholesterol levels from mid to late-life.[xv] Other studies have found that higher levels of HDL cholesterol are associated with larger hippocampal volume and reduced risk of dementia,[xvi] while evidence regarding the benefits of statins on dementia risk is inconclusive.[xvii] Further research is needed to clarify the nature of the relationships in order to guide preventive health strategies and recommendations.

4. Body Weight

Mid-life obesity is associated with increased risk of dementia in later life, and is estimated to account for up to 2% of cases of Alzheimer's disease.[xviii] Studies

have also shown that in mid-life and in early old age (65-75) BMI above *or* below the normal range is associated with increased risk of dementia[xviii,xix]. A recent review summarised the findings of the complex relationship between weight and dementia across the lifespan as follows[xix]:

- central obesity in middle age predicts dementia in old age
- the relation between obesity and dementia is attenuated with older age
- lower BMI predicts dementia in the elderly
- weight loss may precede dementia diagnosis by decades

Further research is required to determine the extent to which change in body weight to a normal BMI is protective against dementia.

5. Blood glucose, and Type 2 diabetes.

There is strong evidence of a link between blood glucose and dementia risk. Numerous studies have shown that people with type 2 diabetes are at increased risk of dementia[xx], and new evidence is showing that high blood-sugar levels in mid-life are associated with greater risk of brain atrophy over time[xxi] (brain atrophy is a key marker of brain health, and a significant risk factor for dementia[xxii]). The associations are clear; however there remains uncertainty around causal relationships, mechanisms, and the effects of intervention. Preventive health research focused on these questions is critical.

6. Smoking

There is clear evidence that current smoking is associated with increased risk of dementia.[xxiii] Former smokers do not have an increased risk of dementia, suggesting that quitting smoking may be beneficial to dementia risk. Limited evidence suggests that passive smoking is also associated with increased dementia risk.[xxiv]

7. Alcohol

Several studies have found that moderate alcohol consumption is associated with a lower risk of cognitive decline, mild cognitive impairment, any dementia and Alzheimer's disease[xxv]. There is insufficient evidence to promote alcohol consumption to non-drinkers as a means of dementia risk.

However, excessive alcohol consumption can cause cognitive impairment and may increase dementia risk. Very heavy drinking over time can cause alcohol-related dementia[xxvi]. Several observational studies have shown an association between heavy drinking and dementia risk, although meta-analyses have not shown this[xxvii, xxviii].

Further research is needed to better understand the nature of the relationship between alcohol and dementia risk in order to inform safe drinking guidelines and health promotion programs.

Other Priorities

In addition to the priorities listed above, there is a need for additional research into a range of potential risk and protective factors that have been identified in the literature. These include:

- **Genetics.** Genes play an important role in the development of cognitive decline and dementia. However, only in a few cases can the cause be attributed solely to a genetic mutation.[xxix] More research is needed to clarify the interactions between age, genes and environmental risk factors for dementia.
- **Anaesthesia.** Studies suggest a possible link between general anaesthesia and dementia risk, however more research is needed to determine the long-term impacts of anaesthetic agents on the brain and cognitive function.[xxx]
- **Ginkgo Biloba.** There is insufficient clinical trial data to determine whether Ginkgo Biloba could be protective against dementia[xxxi], however an international expert consensus meeting determined that there is sufficient promising data to warrant further investigation.[xxxii]
- **Inflammation and anti-inflammatory medications.** There has been a large volume of research on the potential protective effect of non-steroidal anti-inflammatory medications (NSAIDs), with observational studies demonstrating a significant protective effect[xxxiii], which has not been replicated in clinical trials.[xxxiv] Given the potential for intervention, further research is needed to determine timing, type and dose levels that might be optimal for dementia risk reduction.
- **Testosterone and Oestrogen.** Some studies suggest that testosterone supplementation in men[xxxv] and hormone replacement therapy in women[xxxvi] may reduce the risk of Alzheimer's disease, but further research is required.
- **Stress.** Some studies have found that stress may increase dementia risk, however more research is required.[xxxvii]

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