

# **Dementia prevention: managing the modifiable risk factors**

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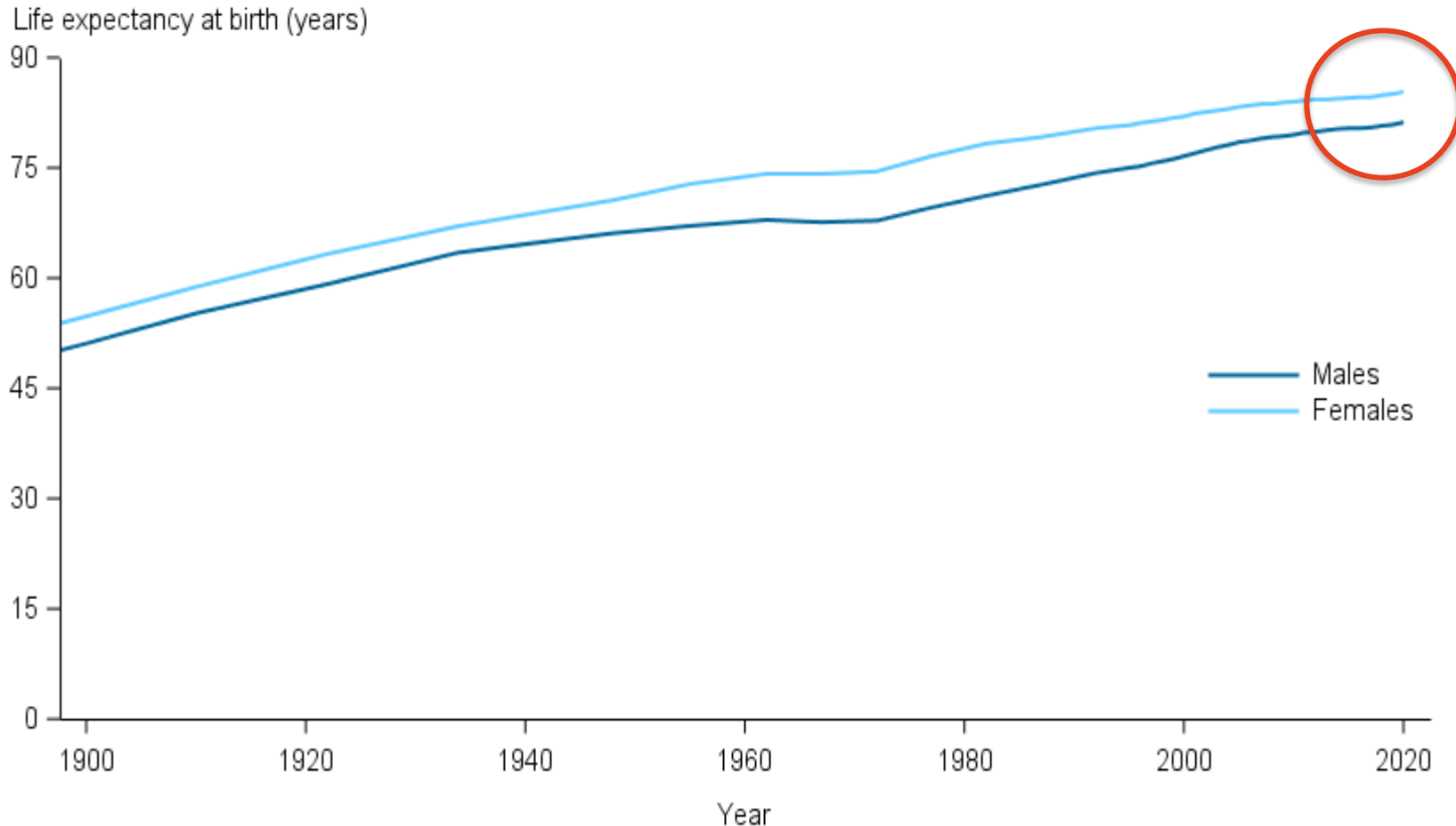


**Health**  
Northern Sydney  
Local Health District

# Life expectancy in Australia

Men: 81.2 years

Women: 85.2 years



## DEMENTIA

- 9% over age 65 (1 in 12)
- 22% over age 80 (1 in 4)
- 35% over age 85 (1 in 3)

# Impact of dementia in Australia

Between

**386,200 - 472,000**

people are living with dementia



**27,800**

people under 65 are living with younger onset dementia



Predicted to be over

**849,000**

people living with dementia by 2058

**5x**

length of hospital stay on average than the general population



Younger onset dementia cases expected to rise to

**39,000** by 2050



**3rd**

leading cause of disease burden in Australia



**2nd**

leading cause of death for Australians and leading cause of death for women

**\$3 billion**

annually to manage disease burden of dementia



# Causes of dementia

- Alzheimer's Disease
- LATE – limbic predominant age associated TDP43 encephalopathy
- Vascular Dementia
- “Mixed” Dementia (Alzheimer's Disease, LATE and Vascular Dementia)
- Dementia with Lewy Bodies
- Frontotemporal Dementia (aka Frontotemporal Lobar Degeneration)
- Parkinson's Disease with Dementia
- Others – PART – primary age related tauopathy, chronic traumatic encephalopathy (footballers brain), prion disease.....

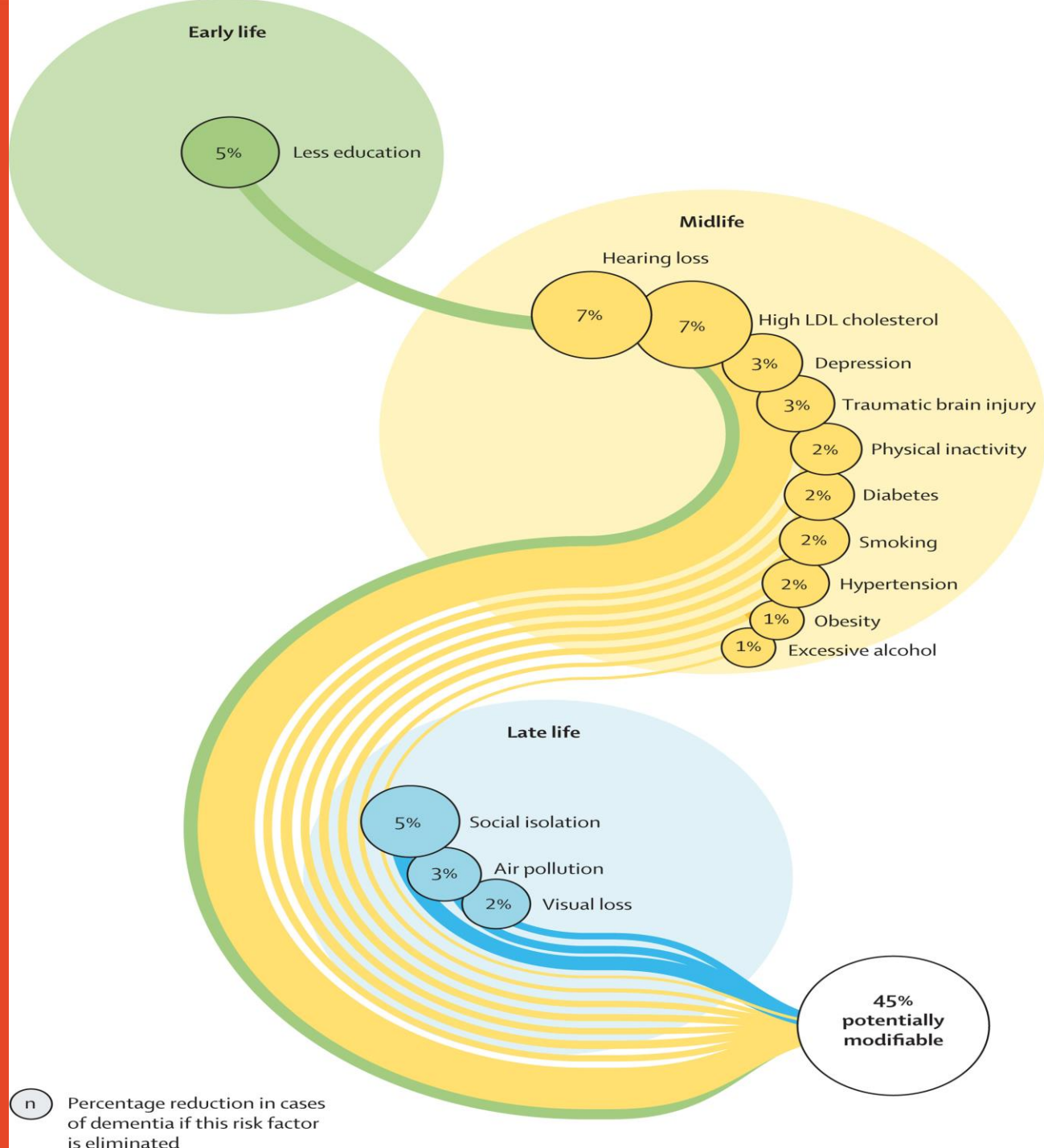
# Prevention of dementia



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# Lancet Commission on Dementia July 2024

## 14 Modifiable Risk Factors



# Dementia prevention – modifiable risk factors



**12**  
dementia  
risk factors



**Plus:**  
13. Visual impairment  
14. Elevated LDL  
Cholesterol

Source: Livingston et al. A, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission

[www.alzint.org](http://www.alzint.org)

# 14 Modifiable Risk Factors for Dementia

## FACTORS LINKED TO DEMENTIA RISK

### EARLY LIFE



Quality of education  
5%



Hearing impairment  
7%



High cholesterol  
7%



Diabetes  
2%



Smoking  
2%

### MID-LIFE



Depression  
3%



Traumatic brain injury  
3%



Obesity  
2%



High blood pressure  
2%



Physical inactivity  
2%



Excessive alcohol  
1%

### LATER LIFE



Uncorrected visual impairment  
2%



Social isolation  
5%



Air pollution  
3%

The percentage figure refers to the reduction in worldwide cases if this risk factor were eliminated. In the UK, a 1% reduction = 10,000 people.

Adapted from The Lancet standing commission on dementia prevention, intervention and care, 2024.

**ALZHEIMER'S RESEARCH UK** **FOR A CURE**

Registered charity numbers - 1077089 & SC042474



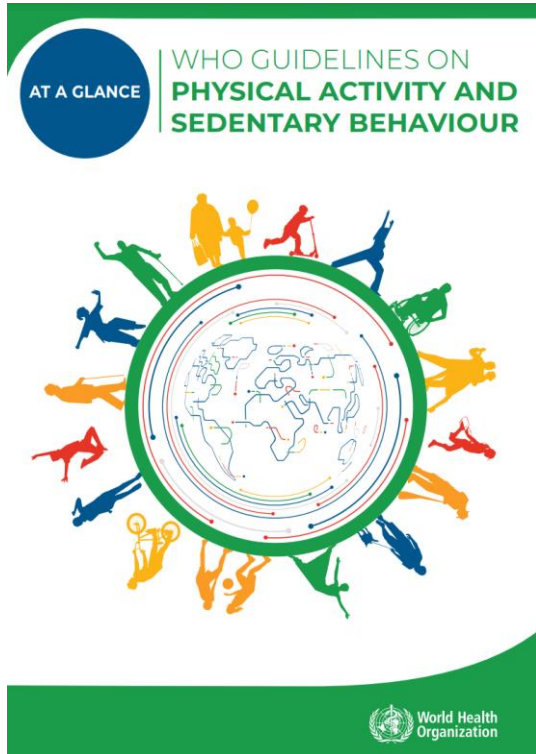


# Physical Exercise



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# WHO Guidelines for Physical Activity for Older People



## OLDER ADULTS (aged 65 years and older)



In older adults, physical activity confers benefits for the following health outcomes: improved all-cause mortality, cardiovascular disease mortality, incident hypertension, incident site-specific cancers, incident type-2 diabetes, mental health (reduced symptoms of anxiety and depression), cognitive health, and sleep; measures of adiposity may also improve. In older adults, physical activity helps prevent falls and falls-related injuries and declines in bone health and functional ability.

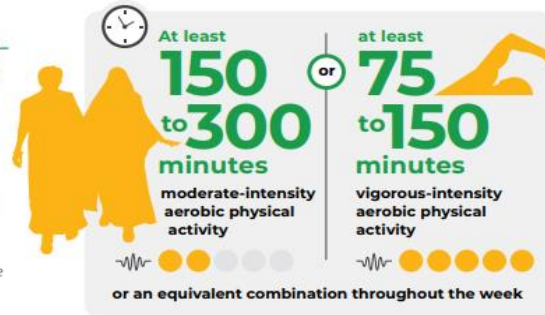
It is recommended that:

> All older adults should undertake regular physical activity.

*Strong recommendation, moderate certainty evidence*

> Older adults should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week, for substantial health benefits.

*Strong recommendation, moderate certainty evidence*



For additional health benefits:

On at least

**2** days a week muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups.



> Older adults should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits.

*Strong recommendation, moderate certainty evidence*

On at least

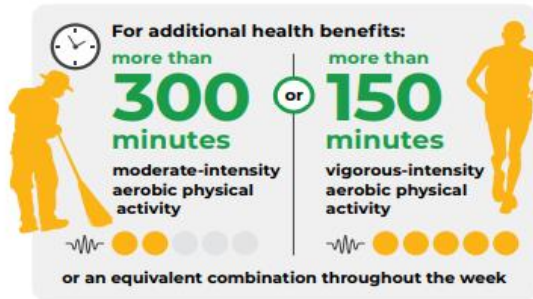
**3** days a week varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity.



> As part of their weekly physical activity, older adults should do varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity, on 3 or more days a week, to enhance functional capacity and to prevent falls.

*Strong recommendation, moderate certainty evidence*

WHO guidelines on physical activity and sedentary behaviour: at a glance



> Older adults may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week, for additional health benefits.

*Conditional recommendation, moderate certainty evidence*

**GOOD PRACTICE STATEMENTS**

- Doing some physical activity is better than doing none.
- If older adults are not meeting the recommendations, doing some physical activity will bring benefits to health.
- Older adults should start by doing small amounts of physical activity, and gradually increase the frequency, intensity and duration over time.
- Older adults should be as physically active as their functional ability allows, and adjust their level of effort for physical activity relative to their level of fitness.

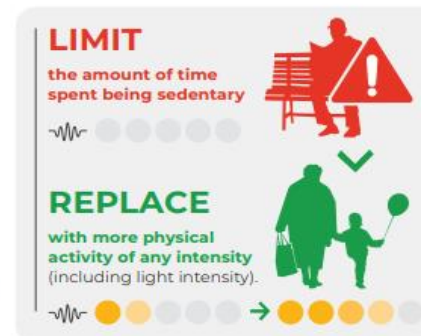
In older adults, higher amounts of sedentary behaviour are associated with the following poor health outcomes: all-cause mortality, cardiovascular disease mortality and cancer mortality, and incidence of cardiovascular disease, cancer and incidence of type-2 diabetes.

It is recommended that:

- > Older adults should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.
- > To help reduce the detrimental effects of high levels of sedentary behaviour on health, older adults should aim to do more than the recommended levels of moderate- to vigorous-intensity physical activity.

*Strong recommendation, moderate certainty evidence*

*Strong recommendation, moderate certainty evidence*



# Dementia prevention – physical exercise

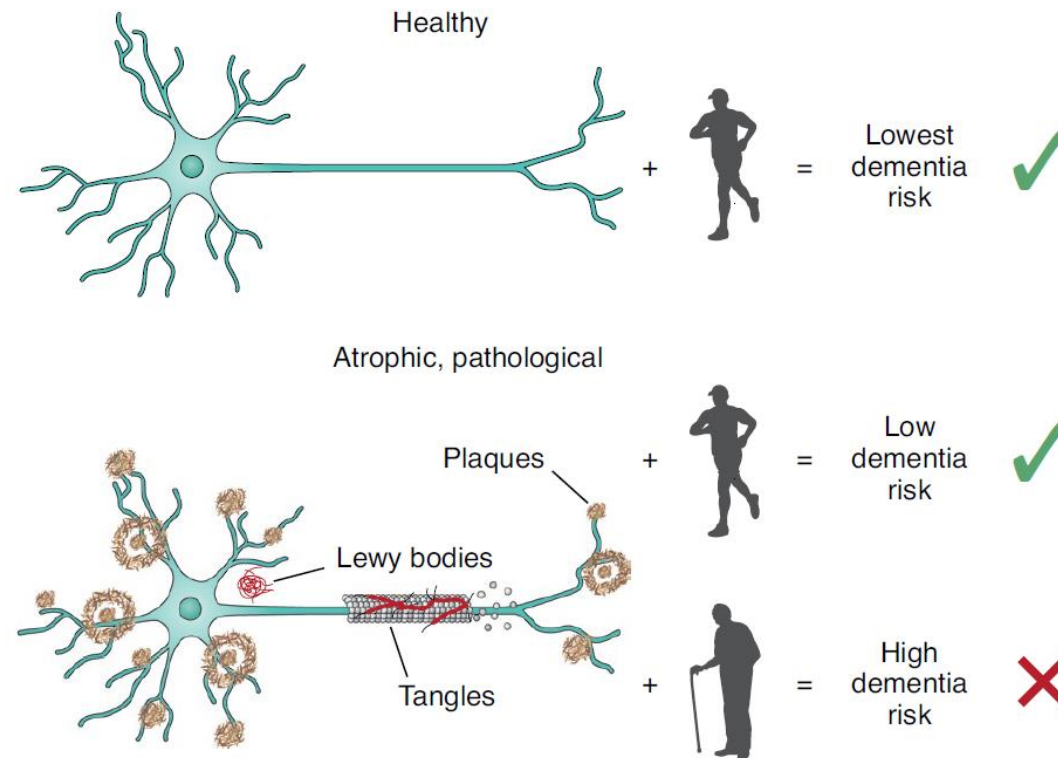
- 30 minutes of aerobic exercise e.g. brisk walking, jogging, cycling, swimming, dancing, 5 times/week
- Resistance training 2 to 3 times/week
  - gym program with heavy weights
  - home program of sit to stand and hand weights, other exercises utilizing body weight
- Balance training
  - Stand on one leg
  - Tandem stance and walk
- Also important for prevention and treatment of frailty, osteoporosis, heart disease, diabetes .....





# The influence of physical function and frailty on expression of dementia

- The pathological changes of Alzheimers disease are present in the brain for up to 20 years before the emergence of symptoms
- The presence/absence of physical frailty moderates the risk of dementia development and the presence of clinical dementia



# Social isolation and Loneliness



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# Loneliness and getting older

- 45% of older people in Australia (1.7 million) live alone
- Loneliness is the emotion and feeling of being alone, whether or not you have social contact
- Humans are pack animals, we like to be part of a group, part of a family, part of a community. We need to belong and we need to stay connected
- Being lonely puts your health at risk, particularly for heart disease, stroke, depression, and dementia
- **Loneliness has a similar impact to smoking on health**



# Dementia prevention – reducing social isolation and loneliness

- **Keep socially active:**

- Interpersonal relationships are very important with family and friends

- **Suggestions:**

- Develop mental activities and social networks
- Learn a language, sing in a choir, play a musical instrument, play cards
- Join: Mens' sheds, "Stitch and bitch", U3A, Probus
- Become a volunteer
- Attend concerts, theatres, galleries



Kuiper 2015



# Nutrition



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# Dementia prevention - dietary interventions

- The **Mediterranean diet** emphasizes fruits, vegetables, whole grains, legumes, fish and other seafood, unsaturated fats such as olive oils, and low amounts of red meat, processed meats, and cakes and sweets
- The **MIND (Mediterranean–DASH Intervention for Neurodegenerative Delay) diet** is a hybrid of the Mediterranean and the DASH (Dietary Approaches to Stop Hypertension) diets. Similar to the Mediterranean diet, the MIND diet features vegetables, especially green leafy vegetables; berries over other fruit; whole grains; beans; nuts; one or more weekly servings of fish; and olive oil. It also limits servings of red meat, sweets, cheese, butter/margarine, and fast/fried food
- Consider ensuring adequate protein such as 2 eggs/day (if cholesterol not a major issue) and adding 2 tbs skim milk powder or WPI (whey protein isolate)
- Emerging evidence for omega-3 fatty acids, flavenols, B vitamins
- 1-2 drinks of alcohol/day, 1-2 alcohol free days/week



Townsend 2024

# Hearing Loss



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# Hearing Loss

- Hearing loss is associated with dementia risk, with worsening hearing loss increasing the risk of dementia – every 10 dB of hearing loss increases the risk of dementia by 4% to 24% (average 16%)
- Highest risk where deafness has been present for 25 years or more
- Possible reasons for this effect:
  - Social isolation and loneliness
  - Depression
  - Decreased cognitive stimulation
  - Vascular damage to cochlea
- Wearing of hearing aids appears to have a protective effect, and lowers risk of MCI and dementia compared to non-wearers by 20 to 25%
- Poor adherence – “in Australia 80% of hearing aids are in the drawer”



# Evidence for prevention



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# Evidence for prevention

- Early prevention RCTs such as the FINGER Study (2015, 2020) from Finland suggest that a multi domain intervention of exercise, diet, cognitive activity and monitoring BP and cholesterol, may improve or maintain cognitive functioning in at risk older people. There are similar ongoing studies in multiple countries
- Cohort studies internationally have shown decreasing incidence of dementia when comparing 2 groups of older people 10 years apart. This is thought to be due to better control of risk factors such as BP, and higher education levels
- Recent 2023 study from China showed healthy diet, regular physical exercise, active social contact, active cognitive activity, not smoking, and never drinking alcohol was associated with slower cognitive decline, and a similar 2022 French study (which included 1-2 drinks of alcohol/day) showed similar findings

# National Dementia Action Plan



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# Summary of National Dementia Action Plan 2024–2034



# National Dementia Action Plan 2024 - 2034

1. Promote equity and human rights
2. reducing stigma and discrimination for people living with dementia and their carers and families
3. Empower individuals and communities to **minimise risk** where they can, and delay onset and progression
4. **more timely diagnosis of dementia**, including more consistent assessment processes and more empathetic delivery of a diagnosis
5. better coordinated **post-diagnostic care**, including support to navigate the Health and Aged Care systems
6. increased understanding and capacity of health and aged care workers caring for people living with dementia
7. improved support for carers of people living with dementia
8. better **dementia data** and support to translate dementia research into practice

# The “dementia drug” dilemma



# Drugs for dementia/Alzheimers disease

- AD first described in 1906
- In 2024 there is still no consensus on the cause
- 2 proteins – amyloid and tau – are implicated in AD, but there are other proteins including alphasynuclein (Parkinsons disease and dementia with Lewy Bodies) and TDP-43 (LATE, frontotemporal lobar degeneration, motor neurone disease) present in other causes of dementia
- Symptomatic treatment has been available for 25 years – cholinesterase inhibitors and memantine
- There have been hundreds of drug trials targeting Alzheimer's disease with very few successes. Recently the monoclonal antibodies and blarcamesine (Anavex 2/73) have shown some positive findings statistically, but do not reach Minimal Clinically Important Difference ie show clear clinical improvement

# The new drug dilemma

- Recent US FDA approval of monoclonal antibodies (mabs) targeting amyloid – aducanumab, lecanemab, donanemab
- Lecanemab also approved in Japan and China. UK approved but NICE recommended against its use, European Medicines Agency declined approval, Australia's TGA declined approval
- Basis of non-approval was that the risks (mainly ARIA – amyloid related imaging abnormalities) outweigh the benefits (possible slowing of progress by 3 to 5 months compared to the placebo group)
- These mabs clearly remove amyloid from the brain (including blood vessels), but there is only marginal effect clinically on cognition and function (0.4 points on an 18 point scale – the Clinical Dementia Rating Scale – between the treatment group and the placebo group over 18 months)
- Lecanemab requires fortnightly IV infusions and MRI scans at least 3 monthly, so cost and resource use is significant

# The monoclonal antibodies against amyloid may be coming: are we prepared?

## Assessing preparedness for Alzheimer disease-modifying therapies in Australasian health care systems

Amy Brodtmann, David Darby, Carly Oboudiyat, Colin J Mahoney, Campbell Le Heron, Peter K Panegyres and Bruce Brew

Med J Aust II doi: 10.5694/mja2.51880

Published online: 20 March 2023

- Acknowledgment that supportive care is still the gold standard for care of people with dementia
- Implement more training in dementia recognition across medical professionals, nursing and allied health
- Increase capacity for molecular imaging and CSF analysis of pathological proteins while awaiting validation of plasma biomarkers
- Perform a full health economic evaluation
- Updating and evaluate the criteria for clinically meaningful responses in dementia syndromes

[Assessing preparedness for Alzheimer disease-modifying therapies in Australasian health care systems | The Medical Journal of Australia \(mja.com.au\)](#)

# Discussion



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