Growing our *understanding* of the global impact of *Alzheimer's disease*

Alzheimer's disease (AD) is the most common type of dementia,[1] **affecting *~50 million*** people worldwide.[2]

In recent years, our knowledge of AD has grown – we know more now than ever before.[3] However, the impact of AD remains significant, and continuous and collaborative research is needed to fully understand this disease.

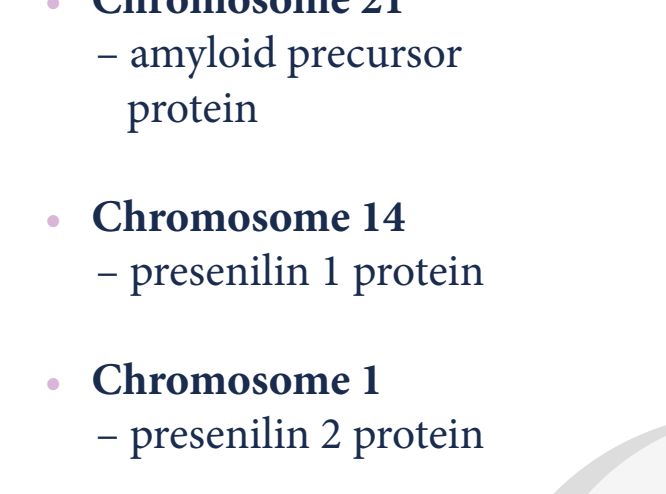
AD is not a normal part of ageing – it changes who we are.[4] The exact cause is still unknown, however key characteristics include the build up of specific proteins in the brain, forming clumps called 'plaques' and 'tangles', which gradually kill brain cells.[5]

There are **two types of AD**, and risk factors can differ for each type of AD:[6-8]

Early onset

~30-65 years

~5% of all cases



Risk factors

Early onset is also known as '**familial AD**' and is linked with genetic mutations:

- **Chromosome 21** – amyloid precursor protein
- **Chromosome 14** – presenilin 1 protein
- **Chromosome 1** – presenilin 2 protein

Late onset

~65+ years

Majority of cases

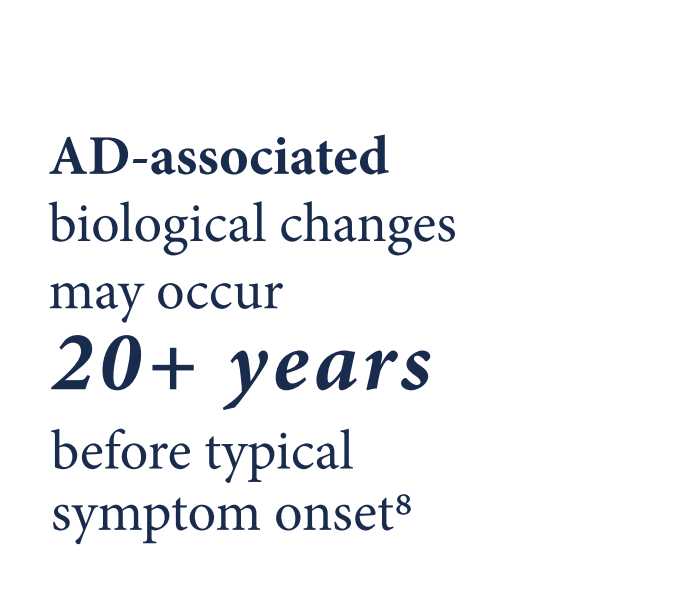
Risk factors

- **Older age**
- **Chromosome 19 mutation** – APOE-e4 gene
- **Family history of AD**

Familial AD *(early onset)* is linked with clear genetic inheritance. **Family history** is a risk factor for *late onset* where genetic information may not be available.[9]

70% of all risks are linked with genetics,[10] but certain health and lifestyle factors may also increase risk.[6] Most cases of AD develop due to a **combination of risk factors.**[8]

Symptoms of AD worsen over time, and can affect day-to-day activities. Some impacts are:[11,12]



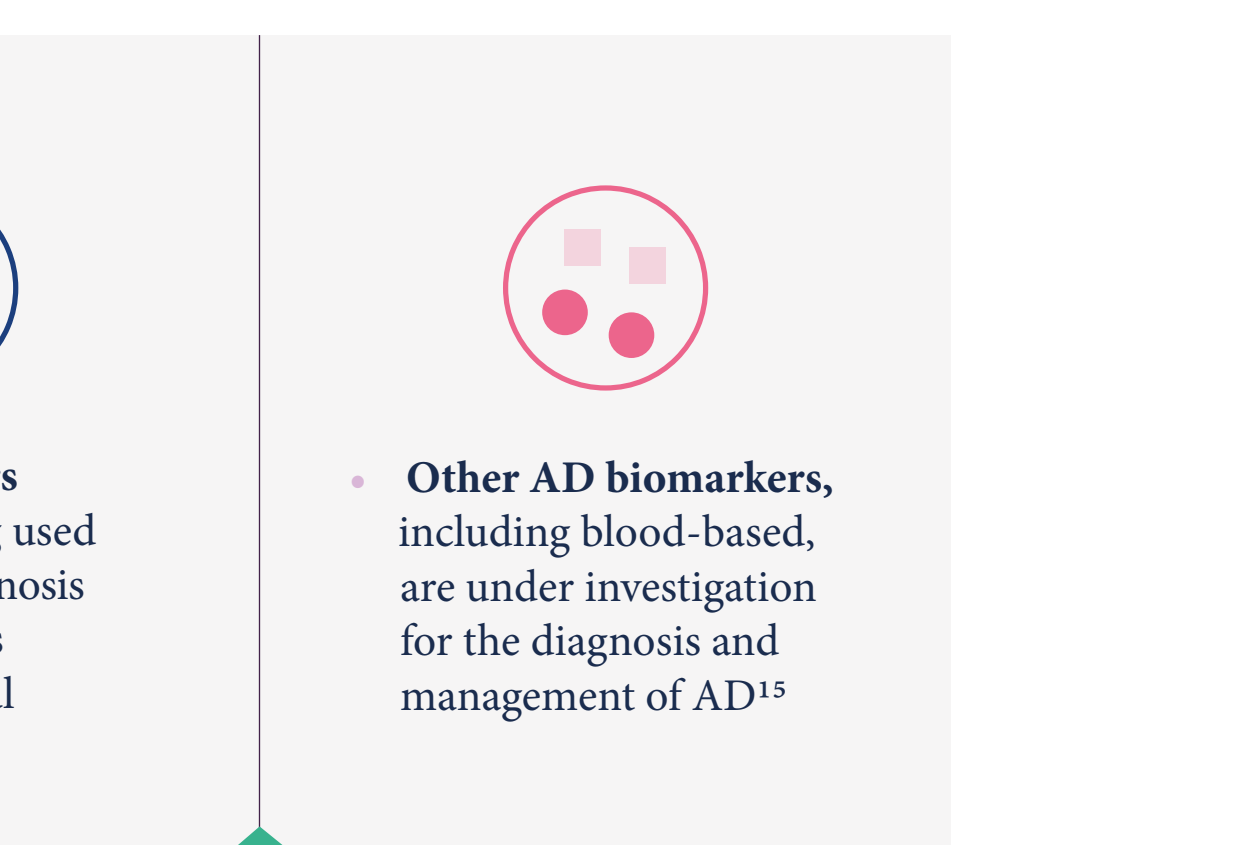
- **Trouble following a conversation**
- **Difficulties with writing**
- **Disliking social activities**
- **Personality changes**
- **Affected sleep cycles**

Diagnosis: the increasing importance of biomarkers

AD-associated biological changes may occur ***20+ years*** before typical symptom onset[8]

An estimated ***75%*** of people living with dementia are undiagnosed[14]

Currently, it can take many months of appointments and multiple tests before AD is diagnosed.[13]



- **AD biomarkers** currently being used to support diagnosis include analysis of cerebrospinal fluid (CSF)[15,16]
- **Other AD biomarkers,** including blood-based, are under investigation for the diagnosis and management of AD[15]

A **biomarker** is a *measurable substance or physical event* that correlates with health, disease or drug treatment.[17]

Wider use of biomarkers could provide a quicker, cheaper, non-invasive test for AD – potentially allowing treatment to start before symptoms do.[15,16]

Impact: on society and people's lives

The economic impact of dementia is a growing global challenge and AD is acknowledged to be one of the **most expensive diseases**; with a cost to individuals and wider society.[18]

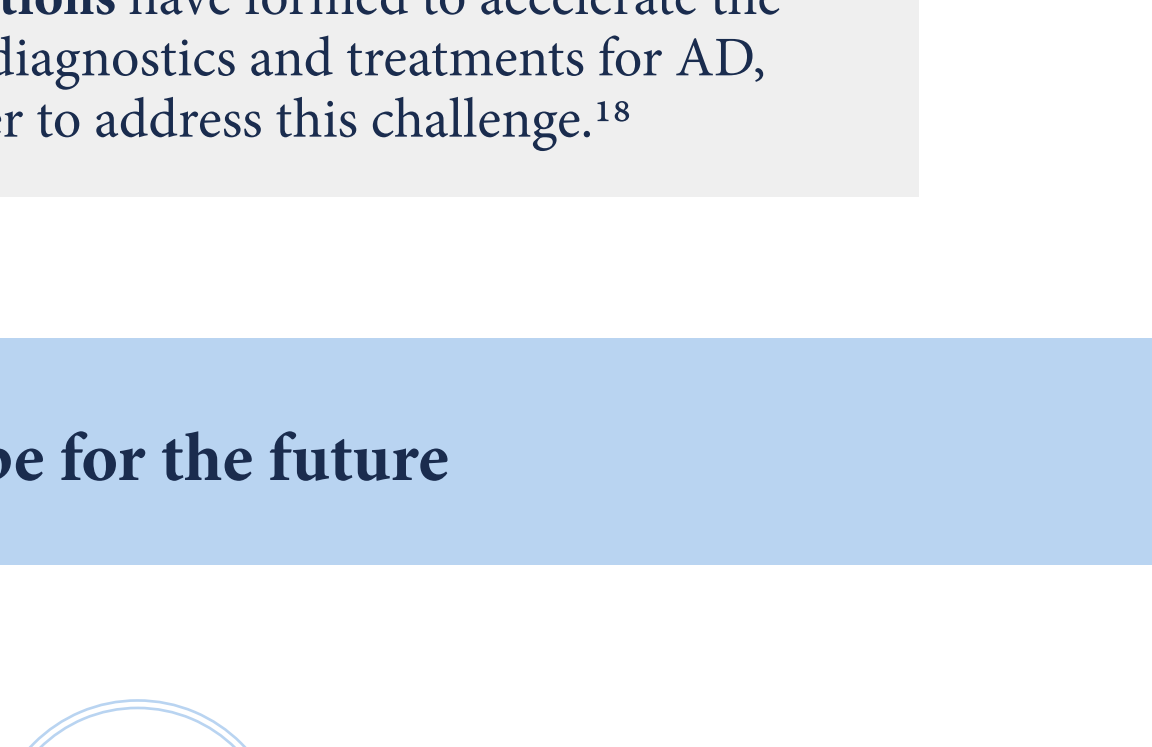
There is a ***21%* higher** personal spend in direct healthcare costs for people with dementia[18]

The cost of dementia increased by ***35%*** from 2010-2019[18]

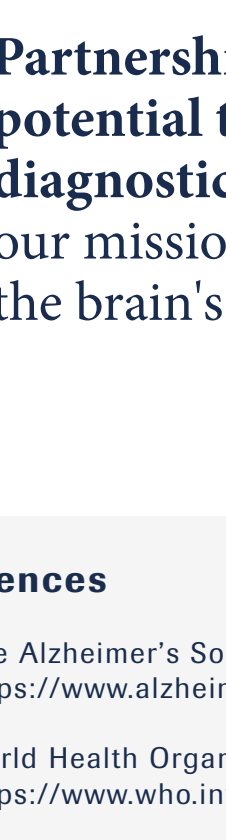
In the **US,** ***18.5* billion hours** of care are provided annually[18]

There are intangible costs to people living with AD and their caregivers, largely focused on quality of life, and these are often difficult to measure:[18]

- **Emotional stress**
- **Pain**
- **Personal relationships**
- **Use of time**



Global collaborations have formed to accelerate the development of diagnostics and treatments for AD, in the order to address this challenge.[18]



Hope for the future

Partnerships, new potential treatments and **diagnostics** are key to our mission to uncover the brain's secrets.

Overcoming this challenge requires close collaboration. **Together** we must **learn, adapt and find solutions** to this disease as quickly as possible.

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