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## Dementia and insurance: cognitive protection

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Swiss Re



22 November 2019

### Cognitive protection

- Dementia: it's **not** [only] **Alzheimer's** and we **don't know much**
- Genetic, lifestyle and environmental **risk factors** exist
- There's growing evidence **we can prevent / postpone** its onset
- The future sees **better intervention** and "**early warning**" systems
- Insurance has a **role to play** today and in **the future**



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## Dementia

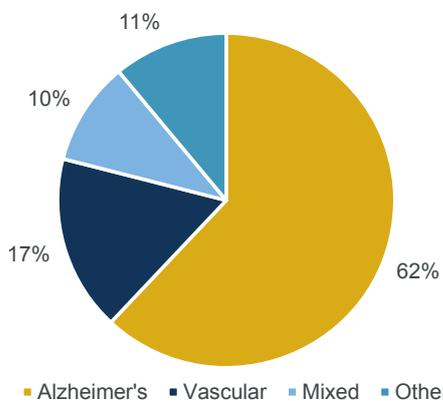
It's not [only] Alzheimer's and we don't know much

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### Dementia:

Many causes, common symptoms

Causes / types of dementia and approximate % of cases attributed<sup>2</sup>



Dementia is a syndrome due to **disease of the brain** – usually of a **chronic or progressive** nature – in which there is **disturbance** of multiple higher **cortical functions**, including memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgement<sup>1</sup>.



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<sup>1</sup> World Health Organization, 2012; <sup>2</sup> Alzheimer's Society, UK – UK figures

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**LATE** entry

# Limbic-predominant Age-related TDP-43 Encephalopathy



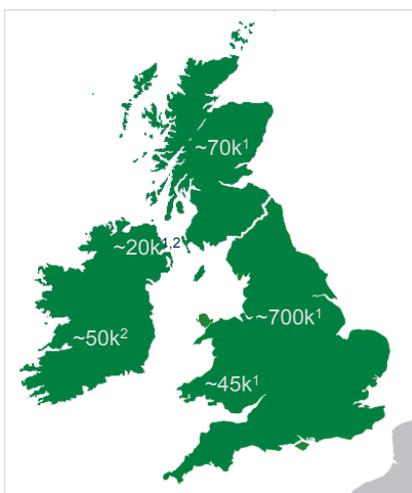
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Peter T Nelson, Dennis W Dickson et al (2019) Limbic-predominant age-related TDP-43 encephalopathy (LATE): consensus working group report, Brain, Volume 142, Issue 6, June 2019, Pages 1503–1527, <https://doi.org/10.1093/brain/awz099>

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## High costs; growing prevalence



- Approx 900k people living with dementia in the UK and Ireland<sup>1,2</sup>
  - >2m by 2050<sup>1</sup>
- USD 715bn pa spent in high income countries
  - 85% apportioned to social care
  - Half of social care provided by family<sup>3</sup>
- Delaying onset of dementia by 2 years across population would reduce costs by ~15% by 2030<sup>1</sup>



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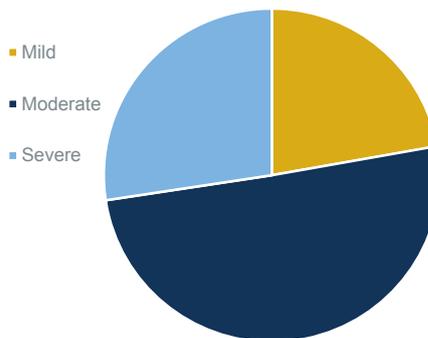
<sup>1</sup> Alzheimer's Society, UK 2013-17; <sup>2</sup> Institute Public Health, Ireland 2017; Alzheimer's Disease International, 2015

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## Mortality and dementia

"Of the cohort [1,400 subjects], 22.2% (95% confidence interval 20.1, 24.5) died with mild dementia; 50.4% (47.8, 53.0) moderate; and 27.4% (25.1, 29.8) with severe dementia."

Proportion of deaths at each dementia stage



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Aworinde, J., Werbeloff, N., Lewis, G. et al. (2018) Dementia severity at death: a register-based cohort study. BMC Psychiatry 18, 355 (2018) doi:10.1186/s12888-018-1930-5

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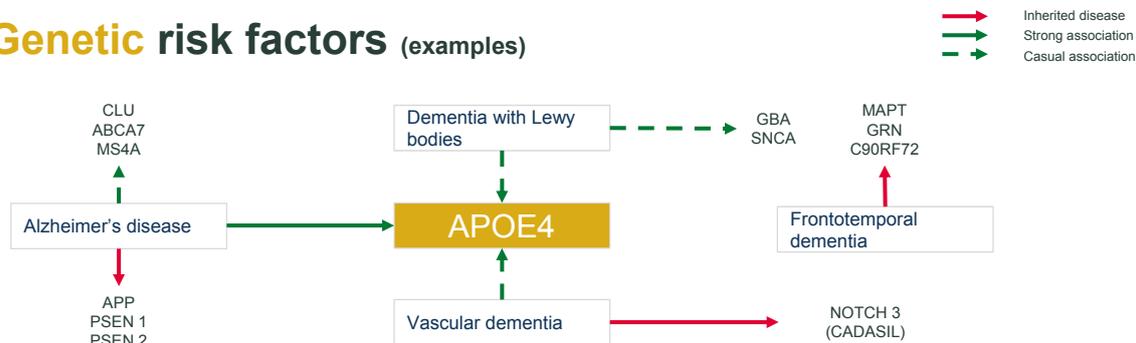
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## Dementia

Genetic and environmental factors exist

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## Genetic risk factors (examples)



### The APOE4 allele story

Zygoty	Mean age of diagnosis	Allele frequency in US / UK	Alzheimer's likelihood
Homozygous	68 years	2%	3-5x
Heterozygous	76 years	25%	2x
Non-carriers	84 years	73%	

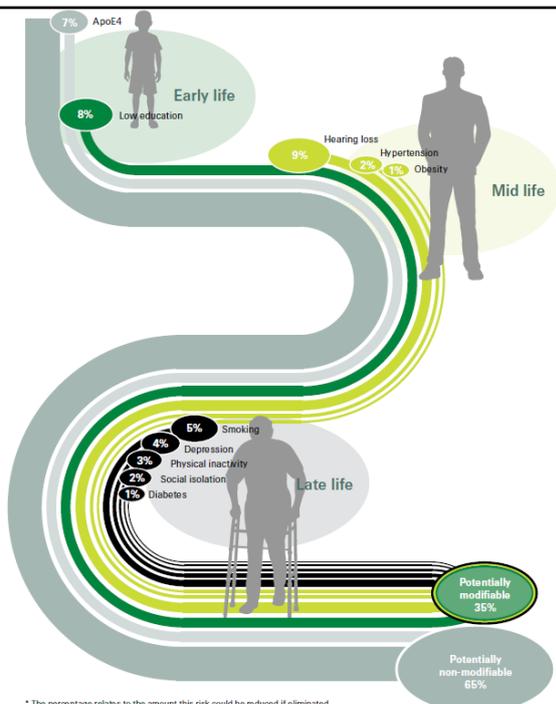


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Riedel et al., 2016; Allele frequency: Alzheimer's Association, 2017; Likelihood and genes: Alzheimer's Society, UK, accessed June 2018

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# Risk factors throughout the **lifecourse**



\* The percentage relates to the amount this risk could be reduced if eliminated.

Livingston et al (2017), Dementia prevention, intervention, and care, *The Lancet*



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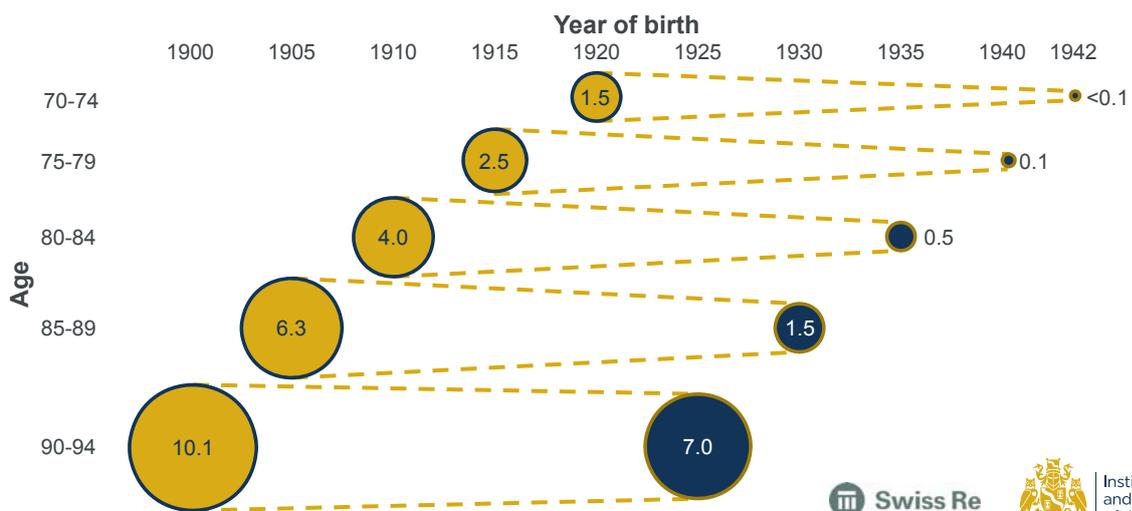
# Dementia

There's growing evidence we can prevent / postpone its onset

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## Incidence has fallen in many geographies

● Incidence per 100 person years (US)



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Adapted from Derby CA, Katz MJ, Lipton RB, Hall CB. Trends in Dementia Incidence in a Birth Cohort Analysis of the Einstein Aging Study. JAMA Neurol. 2017;74(11):1345-1351. doi:10.1001/jamaneurol.2017.1964

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## Reducing risk of dementia



“Cognitive reserve”: stay mentally active



Drink alcohol in moderation



Address hearing loss



Maintain a healthy weight



Take regular exercise



Don't smoke



Eat a healthy, balanced diet



Participate in social activities



If APOE4: be Nigerian or APOE 2?



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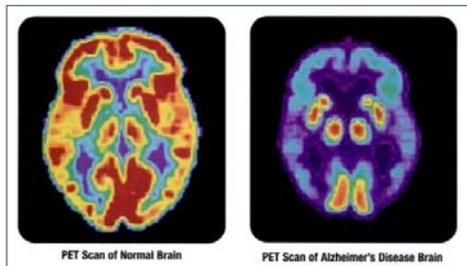
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## Dementia

The future sees better intervention and “early warning” systems

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## Simple blood test



*Plasma biomarkers are significantly correlated with brain  $A\beta$  burden and CSF [cerebrospinal fluid] - $A\beta$ 1-42 level*



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## Cognitive testing apps

Regular testing for:

Instant verbal memory

Delayed verbal memory

Attention

Focus

Impulse control

Spatial memory

Emotion identification

Information processing

Working memory

Executive function

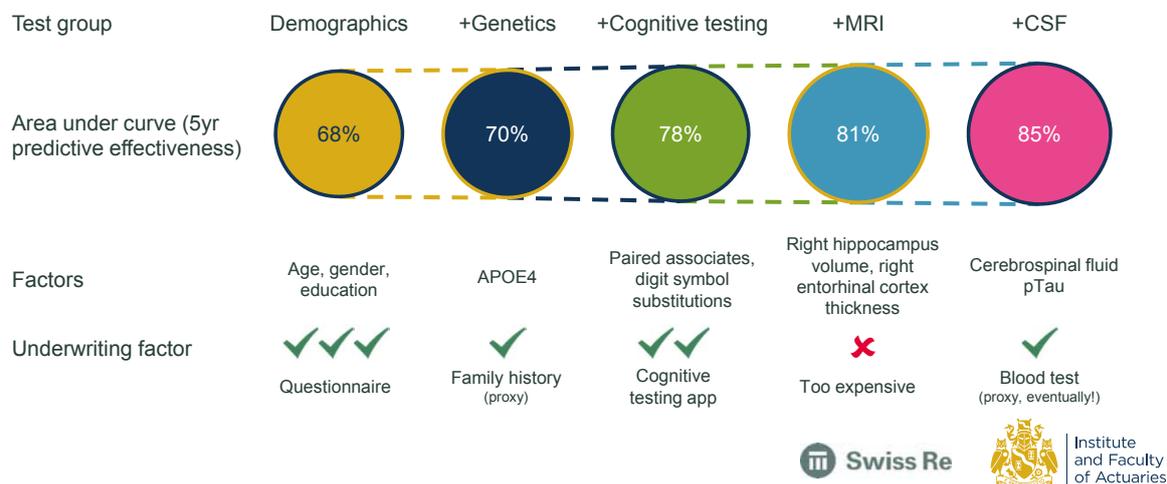
Flexible thinking

Potential applications:  
 • Assessment  
 • Disease mgmnt



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## Predicting who will develop mild cognitive impairment / Alzheimer's disease

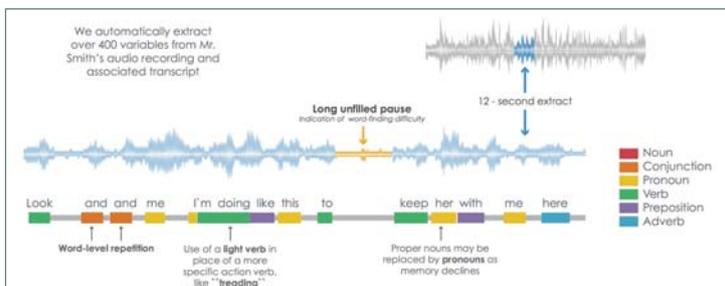


Adapted from Marilyn Albert, Yuxin Zhu, et al; Predicting progression from normal cognition to mild cognitive impairment for individuals at 5 years, Brain, Volume 141, Issue 3, 1 March 2018, Pages 877–887, <https://doi.org/10.1093/brain/awx365> 17

There came a day when **Iris laid her hand on Puss's knee** and said,  
 "Susten poujin drom **love** poujin? Poujin susten?"

## Example – voice recognition via Winterlight Labs

People with Alzheimer’s have word finding difficulties which results in **longer pauses between words**, more hesitation, using **more pronouns and fewer nouns** (e.g. “her” instead of “Rita”) and using **less complex words** (e.g. “car” instead of “sedan”). In contrast, a person with **Parkinson’s disease** or **Multiple Sclerosis sounds different** but might use the same language as a neurologically healthy senior.



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Taken from winterlightlabs.com

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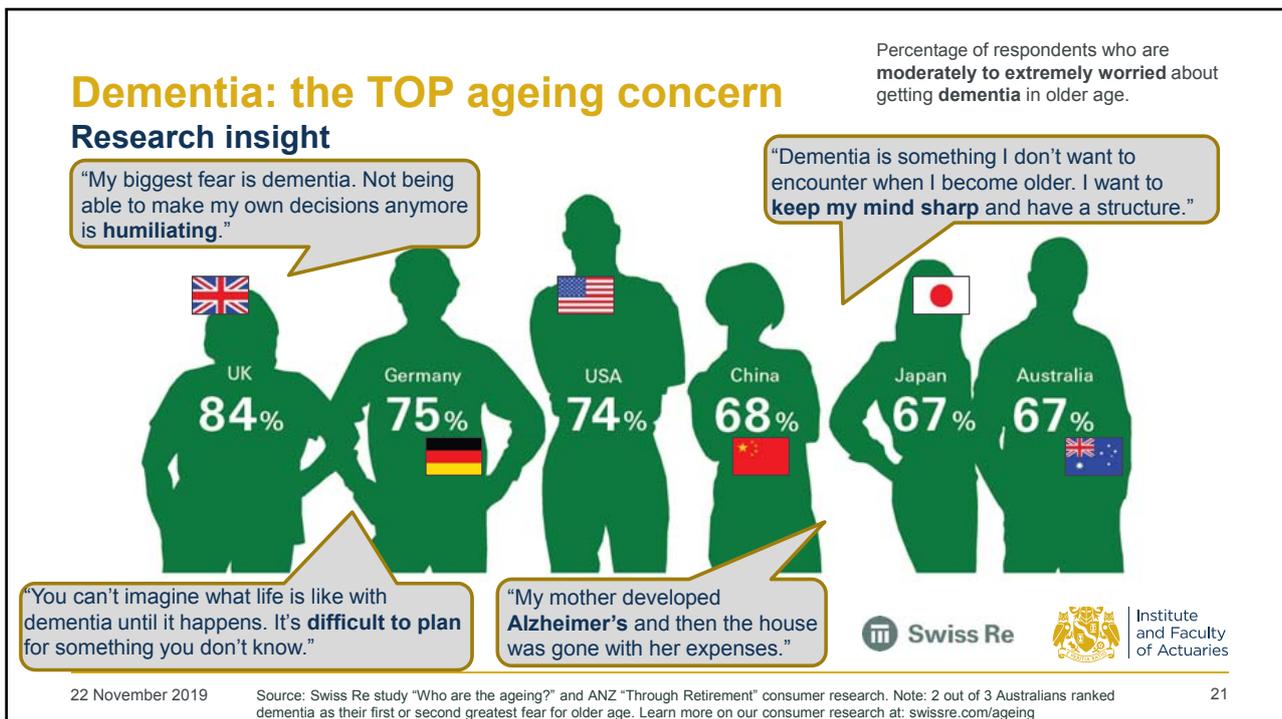


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## Dementia

Insurance has a role to play today and in the future

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## What can insurance do today?

- Resist the urge to “solve everything”
- Provide value-added, relevant services – “payouts plus”
- Build affordable, consumer-led solutions

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# Insurance can help today, but it's the future that's exciting.



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Questions

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