

HIGHLIGHTS



Do **drugs** used to treat high blood pressure, type 2 diabetes or rheumatoid arthritis **reduce dementia risk**?

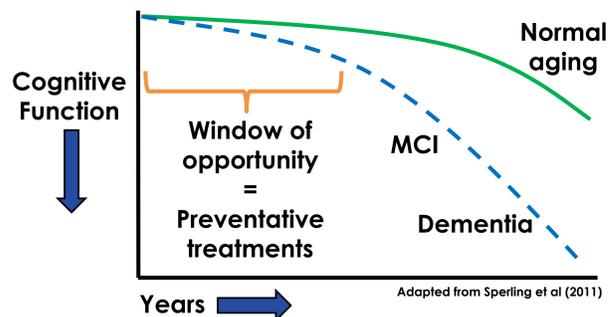


"**Old**" drugs used to treat other diseases could have "**new**" uses to **prevent or delay dementia**.

WHY SHOULD WE PREVENT DEMENTIA?

There is no cure for dementia. Current drug treatments do not stop the disease from getting worse.

There is a **window of opportunity** to **prevent or delay dementia** using drug treatments before the disease starts.



To **save time & money** we can look at drug treatments already being used for other diseases such as those used to treat:

- Rheumatoid arthritis
- High blood pressure (BP)
- Type 2 diabetes

WHAT WE DID

Clinical trials are long and expensive. **Existing data** that is already available offers a **cost effective** substitute. We carried out **3 studies** using existing data:

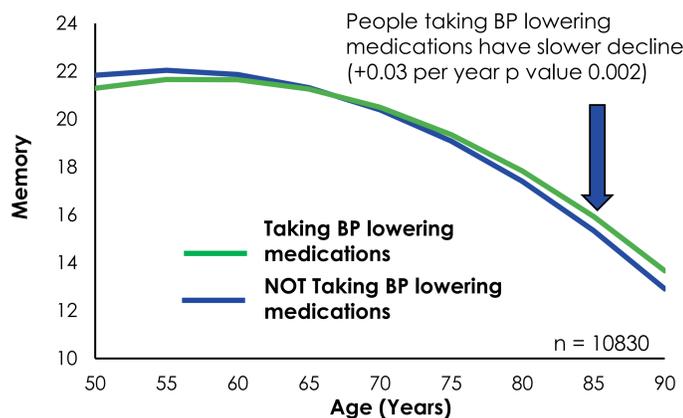
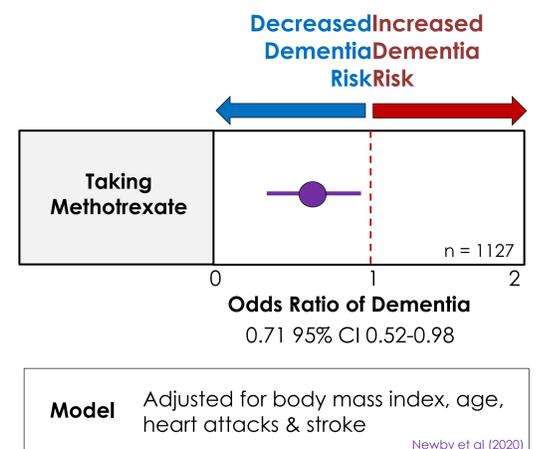
- Data:** Medical records from UK, Spain, Holland & Denmark from patients over 50 with rheumatoid arthritis.
- Study:** Matched case control
- Method:** Conditional logistic regression
- Data:** English Longitudinal Study of Ageing from people over 50 with high blood pressure.
- Study:** Longitudinal cognitive decline
- Method:** Linear mixed effect models
- Data:** Medical records from the USA from patients over 50 with type 2 diabetes and taking either metformin or sulfonylureas.
- Study:** New user cohort design
- Method:** Cox regression with weighting

TEACHING OLD DRUGS NEW TRICKS



The anti-inflammatory drug **methotrexate** is associated with a **decrease in dementia risk in rheumatoid arthritis patients**

Using electronic health records from the UK & Europe, prior **methotrexate use** was associated with a **29% decrease in dementia risk** adjusting for confounding variables (odds ratio: 0.71 95% CI 0.52-0.98). Dementia risk was lowest for those who took the drug for more than 4 years (odds ratio: 0.37 95% CI 0.17-0.79).



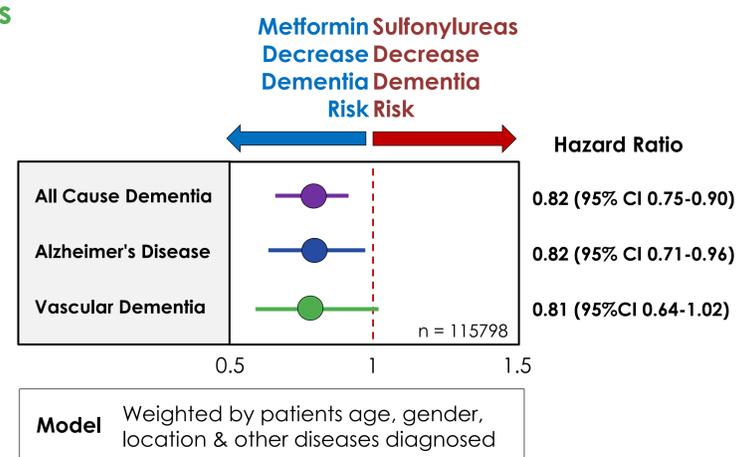
People with high blood pressure taking blood pressure lowering treatments have **slower cognitive decline**

Using mixed effects models on the English Study of Longitudinal of Ageing cohort, people taking **any type of blood pressure lowering drug treatments** had a **3% slower decline** per year in a variety of cognitive function measures (e.g. memory, executive function).



Patients with type 2 diabetes taking the anti-diabetic **metformin** are associated with **lower dementia risk**

Using a new user cohort design, patients from the USA **taking metformin** were significantly associated with **18% lower risk** of all cause dementia (hazard ratio (HR) 0.82 95% CI 0.75-0.90) & Alzheimer's disease (HR 0.82 95% CI 0.71-0.96) compared to patients taking sulfonylureas.



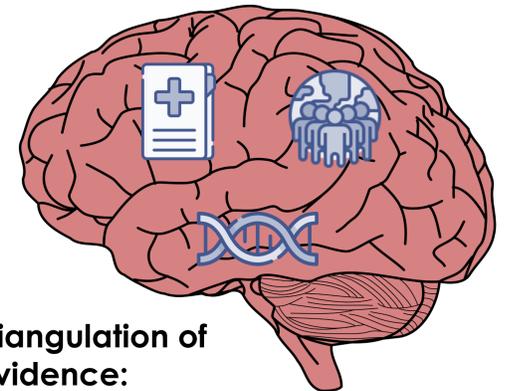
IN SUMMARY

WHY IS THIS IMPORTANT?

This work provides a **cheaper & sustainable alternative** using the wealth of **existing data** which can:

- Prioritise** drugs already being used for other conditions to be tested in dementia prevention clinical trials
- Support** drug development for new drugs through the identification of new drug targets for dementia prevention
- Increase the **understanding** of the causes & risk factors of dementia

WHAT NEXT?



Triangulation of evidence:

Understanding how drugs reduce dementia risk by combining other types of existing data such as genetics & using artificial intelligence methods.

