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# Shingles vaccination could slow cognitive decline

**New findings indicate that a shingles vaccination could not only reduce the risk of cognitive impairment and dementia, but also reduce disease progression among those living with dementia. Scientists from the Heidelberg Faculty of Medicine at Heidelberg University, the University of Mainz, the SAFE Leibniz Institute in Frankfurt am Main, Cardiff University, Stanford University, USA, and the non-profit research organisation Chan Zuckerberg Biohub, San Francisco, USA, published their findings in the journal "Cell".**

The study uses a unique "natural experiment" from Wales that allows for robust conclusions—a significant advance over previous observational studies. A vaccination program against shingles was introduced in Wales in 2013. Only people who were 79 years old on a specific cut-off date were eligible for the limited-availability vaccine. Individuals aged 80 years and older never became eligible. The analysis restricted to adults who turned 80 in the week before and after the cut-off date. The two comparison groups differed only minimally in age; health and behavioral characteristics were comparable. The main difference was access to the shingles vaccine.

The nine-year follow-up of more than 280,000 people without previously known cognitive impairment showed that the shingles vaccination reduced the incidence of new diagnoses of mild cognitive impairment (MCI) by 3.1 percent during this period. "Without vaccination, about 15 out of 100 people developed the disease, compared to about 12 out of 100 with vaccination," explains lead author Dr Min Xie from the Heidelberg Institute of Global Health (HIGH) at Heidelberg Faculty of Medicine at Heidelberg University. MCI is considered an early stage of possible dementia development. In addition, the vaccination was shown to have significant protective effects in both early and advanced stages of the disease: In an additional study of more than 14,000 people who already had dementia at the start of the study, vaccination reduced the number of deaths due to dementia by 29.5 percent within nine years. This could mean that the vaccine could slow down the progression of the disease.

"Our findings suggest that the shingles vaccine may have the potential to prevent or delay MCI and dementia, as well as slow the progression of the disease in people with dementia. However, it is still too early to use these findings to shape healthcare policy, as the underlying mechanisms have not yet been fully investigated. It would be welcome if these findings were validated in a clinical trial," explains Dr Min Xie from HIGH.

"I find the clear indications that the shingles vaccine not only has preventive and delaying benefits for dementia, but also has therapeutic potential for those already suffering from dementia and could increase life expectancy, particularly interesting for a possible additional benefit", adds last author and study leader Professor Dr Pascal Geldsetzer, who took up an assistant professorship in medicine at Stanford University after completing his doctoral thesis and postdoctoral phase at HIGH.

## Stronger response in Women

The protective effect was greater in women than in men. The results indicate a relative risk reduction of around 25 percent for MCI and 50 percent for dementia mortality in women. "To put this into perspective: without vaccination, about 8 out of 100 women develop MCI, compared to about 6 out of 100 with vaccination. Among women with existing dementia, dementia-related mortality was around 50 in 100 without vaccination and around 25 in 100 with vaccination. "The risk of dying from dementia during the nine-year study period was thus halved among vaccinated women," explains Xie. In men, however, the effects were not statistically significant. The gender-specific differences may be due to a stronger immune response to the vaccination in women. In addition, both shingles and dementia are more common in women.

## Mechanism of action still unclear

Researchers suspect that some viruses, such as varicella zoster, which causes both chickenpox and shingles, could be a cause of dementia. Since some viruses remain in the nervous system for life after an initial infection, they can reactivate when the immune system is weakened or in old age. Such reactivations in turn trigger inflammatory processes that could promote cognitive decline.

In Wales, a vaccine against herpes zoster was used that contained a live, attenuated form of the virus. It is no longer in use today. A newer version of the vaccine is now used, which contains only certain proteins of the virus and provides more effective protection against shingles. Further research is now needed to show whether it offers similar or possibly even greater protection against dementia.

Over the past two years, researchers have also been able to verify the effects found in Wales using health data from other countries, including England, Australia, New Zealand and Canada, which have introduced the vaccine in a similar manner. After only about a year and a half, differences in the rate of dementia between vaccinated and unvaccinated individuals became apparent. "In our opinion, research into the exact mechanism behind the effect of the vaccination is urgently needed in order to be able to make targeted use of the positive effects of the vaccination", says Geldsetzer.

**Literature**

Xie et al., The effect of shingles vaccination at different stages of the dementia disease course, Cell 2025, 188, 1–16. https://doi.org/10.1016/j.cell.2025.11.007

**Press release**

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**Further information**

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