

Vaccinations not a risk factor for multiple sclerosis

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PD Dr. Alexander Hapfelmeier (left) and Prof. Bernhard Hemmer, Professor of Neurology at Technical University of Munich, discuss the results of the MS-study. Credit: A. Heddergott/Technical University of Munich

Data from over 12,000 multiple sclerosis (MS) patients formed the basis of a study by the Technical University of Munich (TUM) which investigated the population's vaccination behavior in relation to MS. It showed that five years before their diagnosis, MS patients were

statistically less likely to receive vaccinations than comparator groups. Consequently, there was no positive correlation between vaccinations and the development of MS.

MS is now thought to be a neurological autoimmune disease in which the immune system attacks the brain and spinal cord. It is most likely to occur in young people under the age of 40. Vaccinations are often mentioned as a possible risk factor for MS. Professor Bernhard Hemmer, director of the Neurology Department of the TUM hospital, Klinikum rechts der Isar, teamed up with scientists from the Medical Department and the Bavarian Association of Statutory Health Insurance Physicians (KVB) to analyze a large KVB dataset representative of the general population. The data covered over 200,000 individuals, including more than 12,000 MS patients. The study was published in the Tuesday, July 30, 2019, issue of *Neurology*, the medical journal of the American Academy of Neurology.

Lower vaccination rates among MS patients

The researchers found that five years before being diagnosed, individuals who went on to develop MS had received fewer vaccinations than those who did not develop MS. This applied to all the vaccines investigated: those against pneumococci, meningococci, mumps, measles, rubella, chickenpox, [human papilloma virus](#) (HPV), hepatitis A and B, tick-borne encephalitis (TBE) and influenza. The effect was particularly pronounced in the latter three cases: the control group had received significantly more vaccinations than the individuals who later developed MS.

"The causes are still a mystery. It may be that people perceive the disease long before they are diagnosed and therefore avoid putting additional stress on their immune system. Such effects are in fact evident in our data. Or perhaps the vaccines have a [protective effect](#) that

prevents the immune system from attacking the nervous system. In any case, given the large volume of data analyzed, we can conclusively state that there is no evidence that recent vaccination increases the likelihood of MS or the onset of an initial MS episode", Alexander Hapfelmeier, lead author of the study, explains.

Effect not evident in Crohn's disease or psoriasis

The researchers also wanted to rule out the possibility that the results might be an underlying effect of chronic diseases in general. They therefore analyzed data from two other groups: patients with Crohn's disease, an inflammatory bowel disorder, and patients with psoriasis, a chronic skin disease. The vaccinations of these patients had also been recorded five years before their diagnosis.

Those patients, however, had received as many vaccinations as the healthy control group. "Thus, the results are not due solely to the presence of a chronic inflammatory [disease](#), but to behavior specific to MS," Bernhard Hemmer says, adding: "We already know from other studies that MS sufferers show atypical behavior and medical history long before they are diagnosed. For example, they are more prone to [mental illnesses](#) and also tend to have fewer children. All this clearly indicates that MS is perceived long before any neurological symptoms appear. We therefore need to find suitable markers to diagnose the condition earlier. We see this as one of our most important tasks."

More information: Alexander Hapfelmeier et al, A large case-control study on vaccination as risk factor for multiple sclerosis, *Neurology* (2019). [DOI: 10.1212/WNL.00000000000008012](https://doi.org/10.1212/WNL.00000000000008012)

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