- Immune system

Positive thinking could boost immune response to vaccines, say scientists

The Guardian Australia · 21 Jan 2026 · 51 · Ian Sample Science editor

Positive thoughts may boost the immune system according to research that points to a connection between the mind and our body's natural defences.



Scientists have found people who used positive thinking to boost activity in the brain's reward system responded better to vaccination, with their immune systems producing more antibodies than others after having the shot.

The work does not mean being hopeful can rid people of disease, but hints at the potential for mental strategies to help the immune system fight infections and even attack tumours to keep them at bay.

"It's the first demonstration in humans, in what seems to be a causal manner, that if you learn how to recruit your reward system in the brain, the effectiveness of immunisation increases," said Talma Hendler, a professor of psychiatry and neuroscience at Tel Aviv University.

Previous work has shown that positive expectations can benefit patients with some medical problems, as seen in the placebo effect. And, while animal studies suggest that activating the brain's reward system can boost immune defences, the picture in humans has been less clear.

In the Nature Medicine study, healthy volunteers took part in brain training sessions in which they tried different mental strategies to boost activity in particular parts of the brain. They knew how well they were doing thanks to realtime feedback in the form of scores that rose in line with brain activity.

After four training sessions, the volunteers were given a hepatitis B vaccine. They then gave blood two and four weeks later, which researchers analysed for antibodies against hepatitis.

The scientists found that people who boosted activity in part of the brain's reward system called the ventral tegmental area (VTA) had the strongest immune response to the vaccine. Those who boosted it most successfully did so through positive expectations, or imagining good things happening.

The effect may prove useful in boosting patients' immune systems, but larger trials are needed to show if there is any clear medical benefit. Dr Tamar Koren, a co-author, said the team was investig-

ating whether other parts of the immune system were also affected, such as that responsible for inflammation.

“The approach we tested is intended solely as a complementary tool that may enhance immune responsiveness to vaccination,” said Dr Nitzan Lubianiker, a senior author on the study. “It cannot, and is not meant to, replace vaccines or standard medical care.”

Jonathan Kipnis, a professor of pathology and immunology at Washington University in St Louis, agreed. “It is probably too early to draw conclusions about the degree of clinical relevance,” he said. “If such effects were shown to matter clinically in a larger clinical trial, they would most likely complement the established treatments.”

Jeremy Howick, a professor of empathic healthcare at the University of Leicester, said the effect was small and cautioned that sick patients in a clinic may respond differently, but he still saw positives. He said: “Given that it’s free for healthcare professionals to say things that can generate positive expectations, without exaggerating, like: ‘We’re going to do our best to take care of you,’ or: ‘I’ve seen this treatment work for people like you,’ this is a pretty robust signal suggesting we should do more of it.”