Old vaccines can protect against a range of other diseases

New research shows that the vaccinations for smallpox and tuberculosis can protect against a range of other diseases.

Two vaccinations against smallpox and tuberculosis can also be used to prevent a number of unexpected diseases.

A new study shows that people vaccinated against smallpox and tuberculosis rarely die from a range of other non-related diseases such as heart disease, infections, and neurological diseases.

According to the authors, the vaccinations might be strengthening the immune system, making it better able to handle diseases later in life.

Data from 46,000 people were used in the study. Those who were vaccinated against smallpox and tuberculosis were 43 per cent less likely to die from a number of other diseases.

“It’s a piece of the puzzle to understanding why some vaccinations can modulate the immune system so that it changes the risk of developing other diseases. It’s really interesting,” says lead author Andreas Rieckmann, a Ph.D. student at the Research Center for Vitamins and Vaccines (CVIVA), Statens Serum Institute, Denmark, and the Odense Patient data Explorative Network (OPEN) at the University of Southern Denmark.

New information on the immune system

The research provides new knowledge on how the immune system works, says Professor Jan Pravsgaard Christensen from the Department of Immunology and Microbiology at the University of Copenhagen, Denmark.

“I’m fascinated by these studies, which show that various vaccinations can strengthen the immune system against other types of disease than those they were designed for. It’s really fantastic,” says Christensen.

“Our model to describe how the immune system works cannot explain what they find in this study, and this has implications. Perhaps it will make us think more about how and in what order we give vaccinations to, for example, children,” he says.

We should still use redundant vaccinations

Denmark no longer vaccinates children against smallpox and tuberculosis, and the vaccines have been phased out of the opt-in national childhood vaccination program.
The new study makes a strong case against phasing out redundant vaccinations, say both Christensen and Rieckmann.

Measles and polio are expected to be eradicated over the next decades, but before we phase out the vaccines we should put more research into understanding their beneficial effects on overall health, says Rieckmann.

"In that way we can be better informed when considering whether or not to phase out these vaccinations that could in fact have a beneficial effect health wise," he says.

**We should develop a ‘living’ vaccination**

The new results have interesting implications for the use of other vaccinations, says Christensen.

Previous studies have shown that so-called ‘living’ vaccinations, such as the smallpox vaccination and the BCG vaccination (against tuberculosis), have a life-long effect, while other vaccinations, for example tetanus shots, seem to have the opposite effect.

This means that doctors should consider the order in which children receive vaccinations, says Christensen.

“You can imagine that if you end the vaccination program with a living vaccination, then you end it in a way that has a beneficial effect over a longer time,” he says.

However, he questions how realistic it would be to reintroduce the BCG vaccination for tuberculosis as it would be costly to do so.

“But [the new study] teaches us something about the other living vaccines in the [Danish] vaccination program, which we perhaps shouldn’t be so quick to remove,” says Christensen.

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