Why the latest shingles vaccine is more than 90 percent effective

March 7 2018

Credit: National Cancer Institute

A new study has shown how the body's immune system responds to the new shingles vaccine, Shingrix, making it more than 90% effective at protecting against the virus.

The trial included more than 15,000 participants across 18 countries in Europe, North America, Latin America, Asia and Australia. Participants

in the trial received two doses of the vaccine, with the doses given two months apart.

Lead researcher Professor Tony Cunningham from the Westmead Institute for Medical Research said the study shows that the vaccine stimulates production of a specific immune memory cell (CD4 T cells), generating a strong and sustained protection against the virus.

"The body has two types of immunity: protein antibodies and white blood cells known as T cells. As the virus circulates around the body, antibodies block it from entering cells. But when the virus does get into cells your T cells try to kill those infected cells.

"Our research shows that the vaccine stimulates your immune system to produce more antibodies and it generates a 24-fold increase in T cells. This is 12 times higher than other less effective shingles vaccines.

The research, published in the *Journal of Infectious Diseases*, shows that Shingrix offers protection for up to four years, but Professor Cunningham believes it will last much longer.

"The second dose of the vaccine is important to ensure long-term protection," Professor Cunningham said.

"The efficacy is approximately 90% for all age groups—even for those over 70 years of age.

"This is quite remarkable because there are no other vaccines that perform nearly so well for people in their 70s and their 80s. We are seeing results comparable to those of childhood vaccinations.

"What's particularly exciting, though, is that 90% of recipients had an increased immune response sustained across the 3-year duration of the

study.

"We anticipate that this protection will actually last much, much longer. We are now measuring the efficacy of the vaccine over the next 10 years and are very optimistic about the results," he said.

Shingrix is different from most other vaccines. Many vaccines are made from a weakened form of the virus, but Shingrix is made from just a single protein—known as glycoprotein E—that comes from the outer shell of the herpes zoster virus.

The vaccine also contains an adjuvant—a substance that helps your body fight off the virus. It is the first shingles vaccine to combine a non-live antigen with a specifically designed adjuvant.

Shingles is a viral infection, caused by the herpes zoster virus—the same virus that causes chickenpox. The incidence of shingles increases as we get older, because the body's natural immunity declines.

"When people reach their 50s and 60s, T cell immunity declines allowing shingles to strike. That's why our adult vaccine is directed specifically at T cell immunity," Professor Cunningham said.

Most Australian adults have been infected with the herpes zoster virus and are at risk of shingles, even if they do not remember having chicken pox. By age 85, approximately 50% of the population will develop shingles. Vaccination is the only way to protect against shingles.

  More information: Anthony L Cunningham et al, Immune Responses to a Recombinant Glycoprotein E Herpes Zoster Vaccine in Adults Aged 50 Years or Older, *The Journal of Infectious Diseases* (2018). DOI: 10.1093/infdis/jiy095

Provided by Westmead Institute for Medical Research