

# Nasal vaccine could one day prevent type 1 diabetes



Melbourne researchers have provided the first evidence in humans that a nasal spray vaccine has the potential to prevent the development of type 1 diabetes in those at high risk.

Professors Leonard Harrison and Peter Colman at the Walter Eliza Hall Institute of Medical Research and Royal Melbourne Hospital have been investigating the possibility that type 1 diabetes can be stopped in its early pre-clinical stage through a simple nasal spray vaccine.

Their study, the INIT II trial, follows people in the early stages of developing type 1 diabetes who were given either a nasal insulin vaccine or a placebo weekly for 12 months.

While results so far show that the vaccine allows the immune system to restore immune tolerance to insulin, giving researchers hope that it could eventually lead to a possible prevention of type 1 diabetes, the study is in its early stages with conclusive evidence of its effectiveness possibly many years away.

## HOW IT WORKS

Type 1 diabetes is an autoimmune disease in which the body's immune system destroys the beta cells in the pancreas that produce insulin. Insulin is a hormone that controls the level of glucose in the blood. Without insulin, the level of glucose in the blood rises, causing the acute and long-term complications of diabetes.

If the initial inflammatory reaction against the beta cells is stopped or slowed down, it could prevent the breakdown. The nasal spray works to inundate the body with the required protein in a way that the immune system 'normalises', accepting the protein as self rather than as a foreign invader.

## WHY A NASAL SPRAY?

The insulin vaccine is delivered through the nasal passages so that it stimulates the immune system present in the mucosal linings.

The nasal insulin vaccine works to desensitise the whole immune system to insulin, so that the white blood cells of the immune system, called T cells, are prevented from attacking insulin in the beta cells.

The vaccine can't be given orally because it would be broken down in the gut, making the concentration too low to be effective.

Professor Harrison says that insulin delivered through the nose reaches the mucosa directly without interference, which is more effective.

"We found that vaccination via the nasal route was able to induce changes in the mucosal immune system at other mucosal sites that we didn't see via the oral route," Professor Harrison said.

## WHERE TO FROM HERE?

This is a multicentre study conducted at 11 sites in Australia and New Zealand and is funded by JDRF and NHMRC through the Diabetes Vaccine Development Centre.

Study coordinator and registered nurse at Royal North Shore Hospital in Sydney, Bridgid Hutton, said the current trial involves one year of treatment and four years of follow-up for each participant, the collective outcome of which will govern whether or not the spray becomes available for wider use.

"Having type 1 diabetes myself, I know the challenges that are faced every day while living with the condition," Bridgid said.

"This trial is a great step forward in research and in the pursuit to find a vaccine and ultimately a cure for type 1 diabetes."

FOR MORE INFORMATION ON INIT II CONTACT [WWW.STOPDIABETES.COM.AU](http://WWW.STOPDIABETES.COM.AU) OR 1300 138 712.