Could mothers' bacteria protect c-section babies from obesity risk?

April 11 2017, by Nicola Shepheard

A team of New Zealand researchers will investigate whether bacteria from mothers' vaginas could protect babies born by caesarean section from a greater risk of obesity.

There is growing evidence linking c-sections to an increased risk of the baby later developing obesity and immune disorders. A large international study last year found children born by c-section were up to 25 percent more likely to become obese than those born by vaginal delivery.

Now a research team led by Professor Wayne Cutfield at the University of Auckland-based Liggins Institute have received $150,000 from the Health Research Council to test a possible reason for this link.

"The hypothesis is that babies born by c-section miss out on receiving health-promoting bacteria from their mother's vagina during birth," says Professor Cutfield.

All babies are born with next to no bacteria. During normal delivery their mother's bacteria colonises them, forming the basis for the baby's own microbiome – the total bacteria that live inside and on the surface of our bodies, now recognised as playing a crucial role in our health and wellbeing.

But babies born by c-section are colonised only with the other bacteria they come into contact with – from surfaces they touch, from other people's hands. These bacteria may not have the health-promoting qualities that bacteria from the mother's vagina do.

The Liggins Institute-led study will involve 40 sets of twins born by c-section in Auckland over the next two years. In each set, one twin only will swallow a saline solution containing the bacteria from a swab inserted in the mother's vagina during labour.

Dr Valentina Chiavaroli, a research fellow at the Institute who will be conducting the study, explains the team has a narrow window to introduce the mother's bacteria in the first hour or so after birth, when

babies' stomachs are not yet acidic, allowing the bacteria to reach and colonise the bowel.

"As far as we know, this is the first study in the world to use this method," she says. "Anecdotally, you hear of mothers asking for their babies to be swabbed with vaginal fluid, but we don't know how much of that actually reaches the babies' gut."

Researchers will then analyse the gut bacteria in the babies' stools, repeating the test several times up to the age of three months to check if any changes are persistent.

"We expect that the gut bacteria population of the treated twin will be more diverse than the bacteria in the untreated sibling, and more like the gut bacteria of babies born by vaginal delivery," says Dr Chiavaroli.

"There is evidence that more diverse gut bacteria are protective against various health problems, including obesity," she says.

"With one in four – around 15,000 babies – born by c-section every year in New Zealand, the potential benefits are substantial," says Professor Cutfield.

"This could correct the effect of c-section on obesity risk and contribute to preventing childhood obesity – and prevention is a whole lot more effective than trying to treat it when it's established."

The study will commence later this year and run for two years.

Provided by University of Auckland