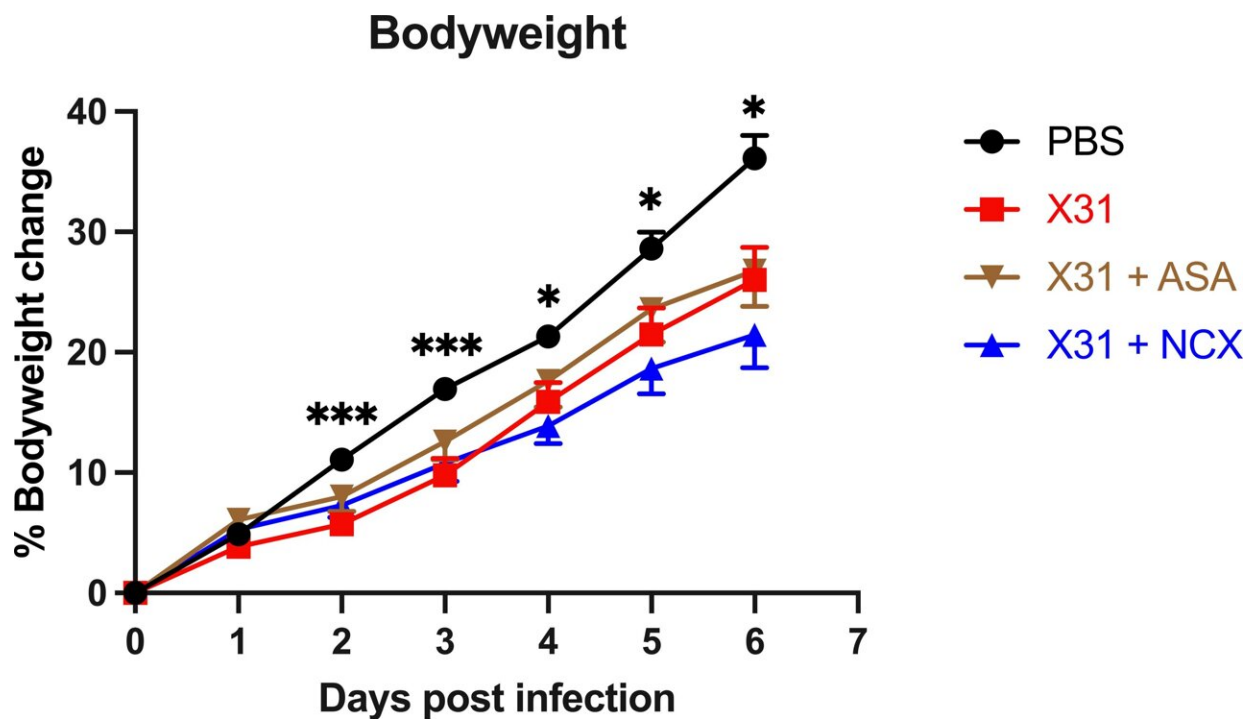


Low-dose aspirin could help prevent pregnancy complications caused by flu infections

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Analysis of dam weight gain following influenza A virus infection. Credit: *Frontiers in Immunology* (2024). DOI: 10.3389/fimmu.2024.1378610

A world-first study has found low-dose aspirin may treat flu-induced blood vessel inflammation, creating better blood flow to the placenta during pregnancy. The study, "Low dose aspirin prevents endothelial

dysfunction in the aorta and foetal loss in pregnant mice infected with influenza A virus," was [published](#) in *Frontiers in Immunology*.

Animal studies examined whether the treatment for preeclampsia could be applied to flu infections—and the results, according to the research team, were very promising.

Lead researcher and RMIT Post-Doctoral Research Fellow, Dr. Stella Liong, said flu infections during [pregnancy](#) can resemble preeclampsia, a pregnancy complication that causes inflammation to the aorta and [blood vessels](#).

Low-dose aspirin is commonly taken to prevent preeclampsia, as it stops the body from creating chemicals that cause inflammation.

"When the [vascular system](#) is inflamed, it leads to poor blood flow and affects the aorta's function," she said.

"This is especially a problem during pregnancy where good blood flow to the placenta is crucial to the development of the fetus."

The research, led by RMIT University in collaboration with Trinity College Dublin, Ireland Professor John O'Leary and University of South Australia Professor Doug Brooks, found fetuses and placenta from mice with influenza A were smaller than those from uninfected mice.

Markers of low oxygen to the blood and poor blood vessel development were also evident in the fetuses.

However, mice treated daily with [low-dose aspirin](#) had less inflammation and improved fetal development and offspring survival.

While the research was still awaiting [human clinical trials](#), Liong said

low-dose aspirin was already recognized as safe to take during pregnancy.

However, the research team recommended pregnant people seek medical advice before taking new medications.

Brooks said influenza A infections during pregnancy was a big concern as every pregnancy overlaps with part of a flu season.

"There are long term implications for both the mother and the fetus, and aspirin might provide a simple solution for preventing this influenza associated pathology," Brooks said.

Why flu infection is dangerous during pregnancy

O'Leary said the research findings had huge implications for pregnancy and seasonal influenza virus infections for pregnant people.

"This study shines a light, for the first time, on the role of vascular inflammation associated with [influenza virus](#) and the potential dramatic effect of the disease-modifying drug aspirin, in low dosage, in [pregnant women](#) with co-morbid influenza," O'Leary said.

While there weren't many studies of the impacts of flu infections during pregnancy, project lead and RMIT Professor Stavros Selemidis said it was clear that pregnancy changed how the body responded to the virus.

Liong and Selemidis' [earlier breakthrough research](#) found the flu virus during pregnancy could trigger a damaging hyperactive immune response, causing the virus to spread around the body from the lungs through the blood vessels.

"We used to think the flu virus just stayed in the lungs, but during

pregnancy it escapes from the lungs to the rest of the body," Selemidis said.

"This infection could set you up for [cardiovascular disease](#) later in life, but also set up cardiovascular disease in the offspring later in life."

While vaccination was still considered the best way to prevent flu infection during pregnancy, Selemidis pointed out vaccination rates were [generally low in the pregnant population](#).

"Low vaccination rates aside, the flu shot may not generate the perfect immune response, especially if someone is pregnant or has an underlying medical condition," he said.

"That's why it's useful to have a potential back up in low-dose aspirin to help prevent vascular dysfunction during pregnancy and improve fetal development."

More information: Madison Coward-Smith et al, Low dose aspirin prevents endothelial dysfunction in the aorta and foetal loss in pregnant mice infected with influenza A virus, *Frontiers in Immunology* (2024). [DOI: 10.3389/fimmu.2024.1378610](https://doi.org/10.3389/fimmu.2024.1378610)

Provided by RMIT University

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