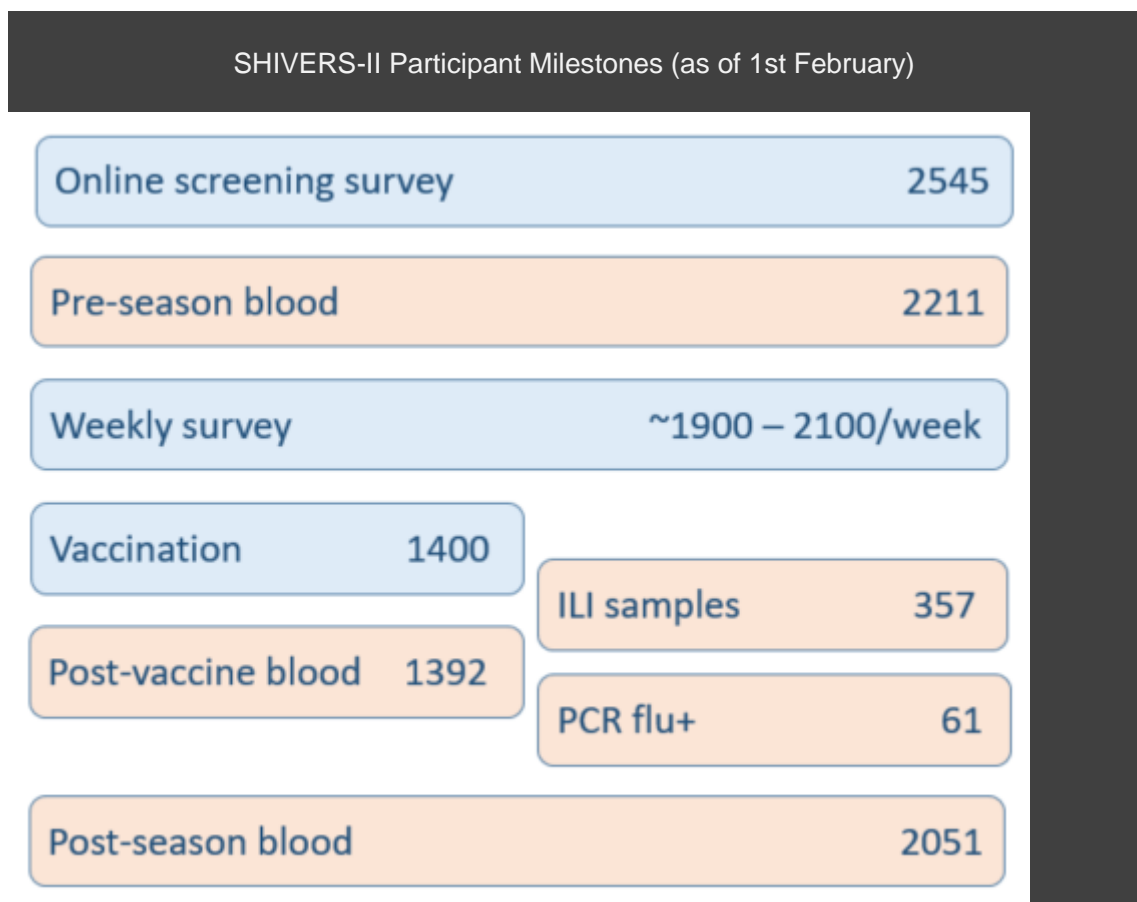


# THE SHIVERS PROJECT

SOUTHERN HEMISPHERE INFLUENZA AND VACCINE EFFECTIVENESS RESEARCH & SURVEILLANCE

## SHIVERS-II study update - February 2019

Thank you to all of you for your participation and contribution to this study! SHIVERS-II 2018 has come to an end with amazing participation throughout the entire study period as you can see below.



### Post-Season Blood Samples

Without a post-season blood for a participant, we cannot do the analysis on other samples provided by that participant over the study (see below). So a huge THANK YOU to the **2051** of you who have given your post-season blood samples.

## Why is your Post-Season sample important?

Our scientists need to look at your post-season and pre-season bloods together to see if your body increased its antibodies against any of the 4 influenza strains (A(H1N1) pdm09, A(H3N2), B/Yamagata, or B/Victoria) that were circulating in New Zealand in 2018. We will see if you were exposed to a flu virus, even if you did not feel ill. The post-season bloods will also show how your immune response waned (decreased) over time against influenza viruses that were circulating (if you were infected) or responding to the vaccine (if you were vaccinated this winter).



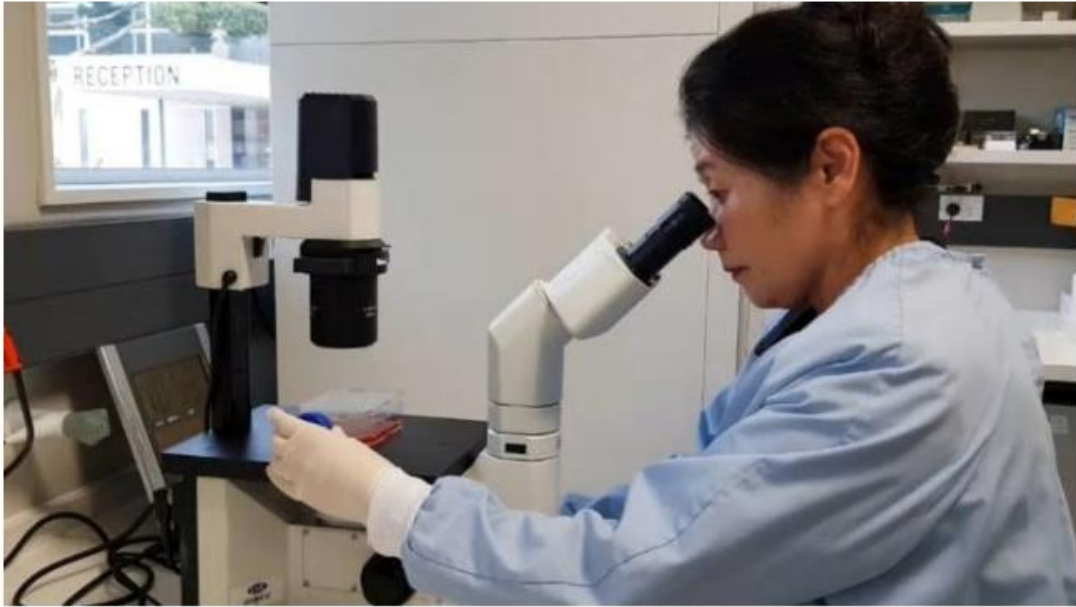
In 2019, the lab staff will assess antibody levels from all of your blood samples to see how well your antibodies reacted to the two surface proteins (Neuraminidase and Haemagglutinins) on the flu virus.

Results of these tests will be provided to participants' GPs in 2020.

## What is Neuraminidase?

Neuraminidase is the second most abundant protein (after haemagglutinin) on the surface of the influenza virus. Current vaccines target haemagglutinin, while neuraminidase has been largely ignored in vaccine development. Our Principal Investigator, Dr Sue Huang says "Neuraminidase has been like the poor cousin compared to haemagglutinin."

Virologist and the SHIVERS Lead investigator, Dr Sue Huang



The ESR led SHIVERS study, published in the *Journal of Infectious Diseases* in July 2018, compared antibody responses not just to haemagglutinin but also against neuraminidase from the same person at the same time during natural flu infections.

"The study surprised us by showing a strong and robust immune response against the second most abundant protein in influenza, neuraminidase." says Dr. Sue Huang.

"These findings will further improve our understanding of how the body responds to and protects itself against flu. They will also help to optimise pandemic and seasonal vaccine designs, particularly for the development of broad and durable universal vaccines."

Due to these important findings, ESR was awarded with the current international grant to continue focusing on immune response to flu vaccines and infections (SHIVERS-II).

## **St Jude Scientists**

Our team of scientists from St. Jude's Research Hospital in Memphis will be testing your samples in 2019. They will be looking at special types of white blood cells, specifically B & T cells, in samples from across the season.



Paul Thomas,  
Department of Immunology at St. Jude Children's Research Hospital, Memphis.

### **What are B & T cells?**

B and T white blood cells are critical components of your immune system that can rapidly divide and increase in number when you are exposed to a pathogen (a flu virus, for example). You have many different kinds B and T cells that can be further divided into numerous sub-groups with many different functions. Your B cells produce antibodies that then bind to viruses preventing them from making more viruses. T cells kill cells in the body that are infected with viruses as well as help B cells to produce antibodies. After you have fought off an infection, a few B & T cells remain and retain their memory of the infected virus and this allows your immune system to respond even faster when they see that virus again. We also use this knowledge to create vaccines made from dead or weakened viruses, so the vaccines prime your immune system to provide long term memory which protects you from the infection.

### **What are the St Jude team trying to find out from their testing?**

The St. Jude team wants to characterise your B and T cells. They will measure how many flu virus-specific T and B cells you have, what parts of the flu virus these B and T cells recognise, how many are primed to kill flu viruses or cells infected with flu viruses, and how many become memory cells that spring into action the next time you get the flu. In addition, they will compare these cell populations in individuals vaccinated against the flu to those in people who were not vaccinated. In this way, they will be able to explain how vaccination triggers B and T cell responses and therefore determines your actual protection against the flu.

### **2019 – SHIVERS-II Study**

We are extremely excited to announce that the United States National Institutes of Health through the St. Jude Center of Excellence for Influenza Research and Surveillance will continue funding SHIVERS-II in 2019.

We hope to retain you in our 2019 study, which will be similar to 2018's study with a few enhancements\*. We will send you the details of the study through soon.

\* 2019 SHIVERS-II enhancements include a rapid flu test (results in 10 minutes) to detect flu in those visited by study nurses because of cough and fever (Influenza-like Illness). Nurses will only then take blood from those with influenza virus detected. This means fewer blood draws for you, our participants!

\* Also new in 2019, we will ask those infected with the flu if we can follow their household members to better understand how the flu virus spreads between people. We will use this information to advise the government on how to manage the spread of flu in communities.

## **Feedback Survey**

We will be sending you a survey link shortly to gather your feedback and any suggestions you have to help us improve the study in 2019.

## **Science Award**

In early November ESR SHIVERS won a team award at the Science New Zealand National Awards 2018 (<https://www.esr.cri.nz/home/about-esr/our-science-in-action/shivers-project/>)

The award recognized the contribution that SHIVERS has made to new insights into the burden of influenza, vaccine effectiveness and influenza immunology, as well as Respiratory Syncytial Virus, and other respiratory viruses.





Members of the team with the Hon Dr Megan Woods at the Science New Zealand Award dinner. From left to right; Wendy, Lauren, Sue, Tim, Ben, Robert, Jacqui, Christina and Judy.

If you have any questions, please get in touch with the project team: [ShiversProject@esr.cri.nz](mailto:ShiversProject@esr.cri.nz).

Kind regards

The SHIVERS-II Team



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**Our mailing address is:**

ESR - Kenepuru Science Centre, 34 Kenepuru Drive, Porirua, 5022

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