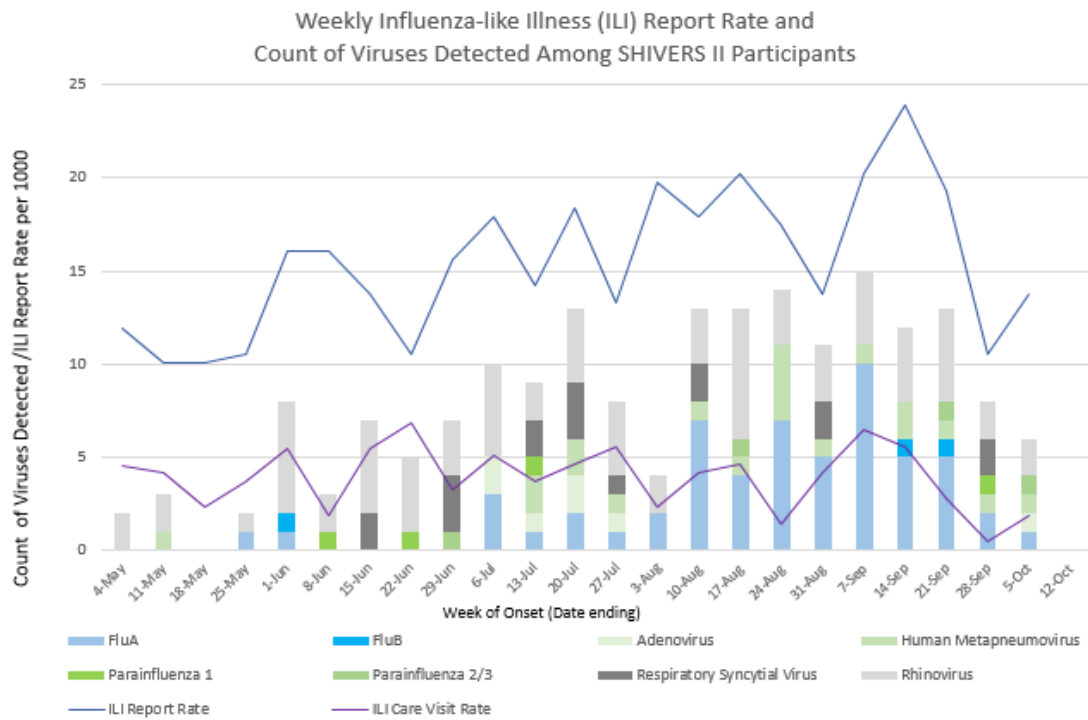


THE SHIVERS PROJECT

SOUTHERN HEMISPHERE INFLUENZA AND VACCINE EFFECTIVENESS RESEARCH & SURVEILLANCE

SHIVERS-II study update - October 2018

The SHIVERS-II 2018 study is nearing completion with weekly surveys on influenza-like illness (ILI) ending on the 12th October 2018. A HUGE thanks to all our participants. As of 11th October, we have 60 positive flu cases with 50 of these detected from August onwards, showing that it has been a late flu season. The most common flu strain this season has been influenza A(H1N1) pdm09 (Figure below).



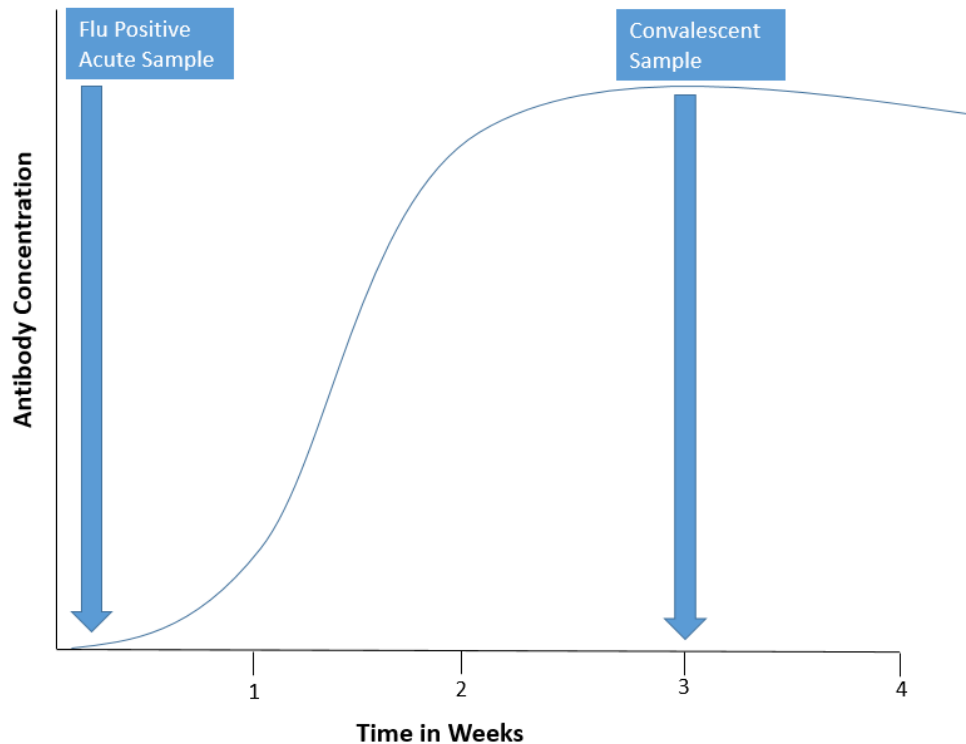
This graph shows the weekly rate of Influenza-like illnesses reported by participants on the weekly e-surveys (blue line) during the study period. A rate of around 20 Influenza-like illness reports per 1000 participants means that about 45 participants reported Influenza-like illness in that week. The different coloured bars on the graph represent the count of the different respiratory viruses that have been detected among SHIVERS-II participants each week.

Convalescent Blood samples

If a participant with influenza-like illness tests flu positive on a respiratory swab, we collect 2 blood samples, one when they were sick and another around 3 weeks later. We do this because these

bloods tell us very important information for the study. The convalescent blood is compared with the acute blood to show if there is any change of the antibody response to the most common influenza virus surface protein (haemagglutinin [HA]) and then we can conclude whether the participant experiences a flu infection.

When a participant is due for a convalescent blood sample collection, study nurses will contact them to arrange a time for this. Thank you in advance for your support on this important aspect of SHIVERS-II.



This graph shows the increase in antibodies following exposure to the flu virus and the optimal time for acute and convalescent blood collection to see any changes in the antibody response.

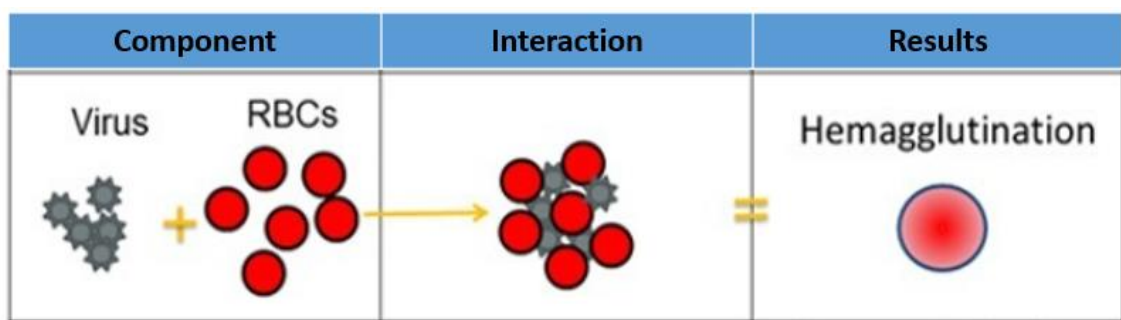
Post Season Blood

From about late October, we will send instructions about the final blood sample collection for the year (post-season) to participants. These messages will be sent in batches to try to manage the demand at SCL collection centres. Participants can go to any of the SCL sites listed on the [Post-Season Specimen Request Form](#), posted on the SHIVERS website. Study nurses will also be available for these blood collections. Study nurses and SCL sites will have copies of the [Post-Season Specimen Request Form](#). Participants: remember to have your electronic reminder ready when you go for your collection to make it quick and easy.

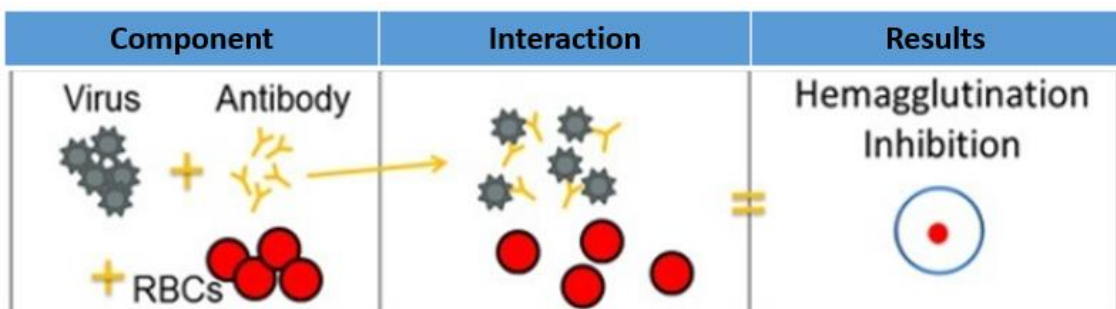
Understanding the Virus

In early 2019, our scientists at ESR will start analysing the blood samples taken from SHIVERS-II participants. They will test participants' serum from across the season (pre-season, post-vaccination, ILI acute, ILI flu positive convalescent, and post-season) against 4 common influenza viruses: A(H1N1) pdm09, A(H3N2), B/Yamagata, and B/Victoria. The two tests are HAI (Haemagglutination Inhibition) and NAI (Neuraminidase Inhibition) which measure the participants antibody response to these viruses.

Example of HAI Inhibition Testing



A sample with no antibodies present will appear a solid red in colour. This is because the red blood cells that are used in the assay have been allowed to bind to the influenza virus. (Haemagglutination)



A sample that has antibodies present will bind to the influenza virus. This will block the red blood cells that are used in the assay from binding to the virus. The red blood cells will then settle in the bottom of the test plate forming a 'red button.' (Haemagglutination Inhibition)

Our scientists also monitor the changing nature of the Haemagglutinin (the most abundant surface protein of the flu virus) which mutates quickly. This enables scientists to find newly

mutated predominant viruses and produce better matched annual vaccines, providing more optimal protection for people.

Leading the way

ESR's Senior technician, Jacqui Ralston, is our technical expert on flu serology. She will lead the HAI (Hemagglutination Inhibition) and NAI (Neuraminidase Inhibition) testing in 2019. Jacqui has vast experience in testing serological (in the blood) responses to viruses, which includes successfully establishing a HAI test method for a study during the 2009 A(H1N1) pdm09 pandemic that estimated the actual number of New Zealanders infected with the pandemic flu strain. <https://doi.org/10.1371/journal.pone.0013211>

In 2015, Jacqui trained on anti-neuraminidase (the part of the influenza virus that replicates) antibody detection at the WHOCC (World Health Organisation Collaborating Centre) at St Jude Children Research Hospital, Memphis USA. She now will use this training to help us understand antibody responses to seasonal flu strains, which in turn will allow better control of seasonal flu and also assist in preparations for another flu pandemic.



Here is Jacqui in the lab with a lot of testing plates!

We asked Jacqui about the 2019 testing? "It is going to be challenging organising and carrying out the testing of such large numbers of serum samples, but, we have a great team in the lab so everything should run smoothly.

Seeing the final results from all the data we obtain should be fascinating and informative. That's what makes the busy times all worthwhile!"

RPH Study Nurses

We have been very fortunate to have a fantastic team of study nurses from Regional Public Health (<http://www.rph.org.nz/>) working with us on this study. When the flu season ends the team will be down to one study nurse, Amanda de Cleene, who will continue to be out collecting convalescent (after flu infection) and post-season bloods samples until just before Christmas.

In her 7 years as a nurse, Amanda has done it all – primary care, secondary, and tertiary healthcare. She has experience as working as an outback nurse near the Simpson Desert. Most recently, she served in the Hutt Hospital Emergency Department before starting on SHIVERS-II. Amanda, unfortunately, knows far too well what SHIVERS-II is about – she contracted Flu A, this season and was very unwell for a few weeks. She has used this experience to provide participants with recommendations for lessen the impact of the flu. Her go to remedy is a course of Zinc.

When asked about her role so far Amanda said:

“I am loving being part of the team of nurses that are triaging and seeing YOU, the Study Participants! Thank you to you all for stepping up and offering your time, energy, blood and cells for this important piece of work. You’re all STARS.”

She also has some tips for managing the flu;

“Keep your fluids up! Cough, fever and those runny noses makes for plenty of fluid loss while you’re unwell. It’s a great excuse to eat ice blocks (70mls for a popsicle) if your throat is sore. Rest is super important too; don’t be hard on yourself –Influenza has done that job already. Take care out there, summer is just around the corner”.



Amanda in the Simpson Desert,
Outback Australia

Thank you for a cracker of a 2018 for SHIVERS-II! We thought we would enrol around 1750 people but it grew to over 2000 amazing cohort members. Participants’ commitment and enthusiasm has been immense. We could NEVER have done this without YOU!

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

Thank you from all the SHIVERS II team and our collaborators.



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