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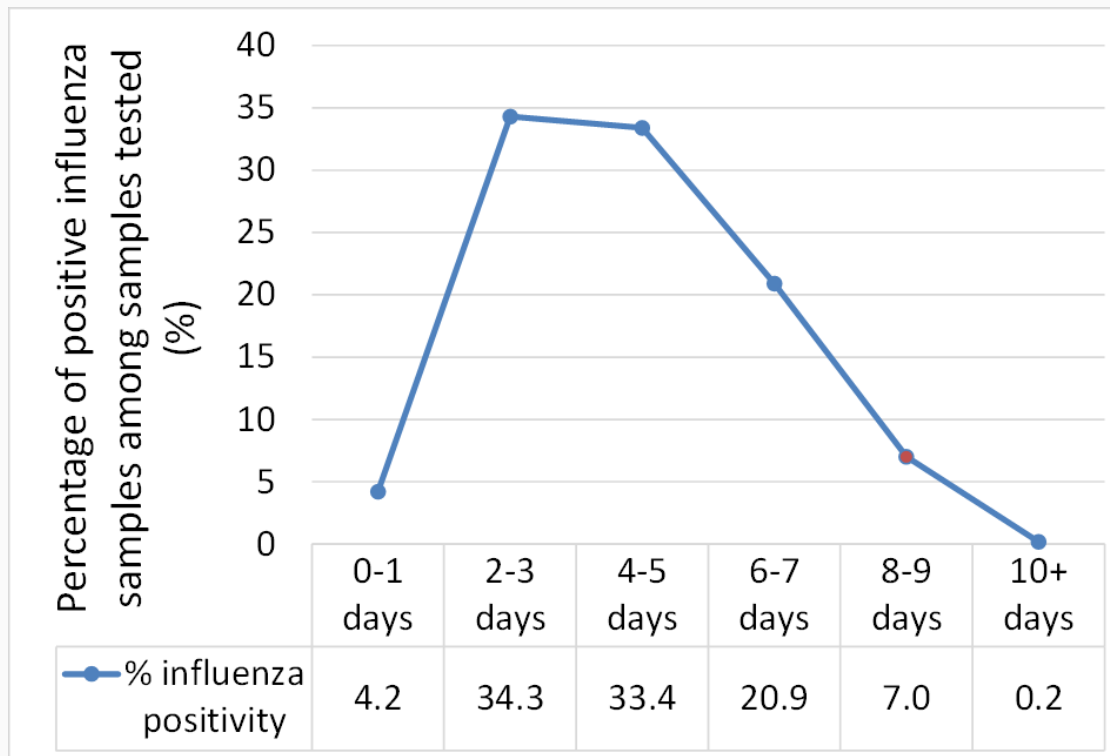
### **SHIVERS-II study update – June 2019**

We are excited to be into our second year of SHIVERS-II, thank you to all of you who have agreed to continue in 2019. As of 22<sup>nd</sup> May we have 1685 participants re-enrolled. It is really beneficial for our scientists to be able to follow you again, to further test your bodies response to the flu virus and/or vaccine across multiple seasons.

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### **Viral replication**

Influenza virus infection tends to be short-lived. For example, if you are exposed to the virus, you go through a silent incubation period without showing any symptoms, about two to three days after being exposed. Then illness (such as fever, cough, running nose, headache, aching muscle) begins abruptly. The virus replicates and reaches a peak (we call it high viral load) usually 3 days after the onset of illness and then begins to decline because your immune responses start to kick in. Our previous SHIVERS data showed that influenza positive rates by days after the symptoms onset (Figure 1). Nearly 93% of the flu were detected within 7 days of the illness and only 7% of the flu were detectable within 8-9 days of the onset.



Percentage of positive influenza samples among samples tested (influenza positivity)

Therefore, it is very important for us to take your swab as soon as we can after you report your symptoms. If we take your swab too late it replicates at a low level (we call it a low viral load). A low viral load does not mean a mild virus it just means that a small amount of the virus detected.

## Weekly Surveys

You will have noticed the weekly surveys are slightly different from last year, as we have introduced a new feature of the survey form which allows you to open it anytime you want. The reason we've designed the surveys in this way is to catch flu more rapidly and allow you to report your symptoms straight away. This will help our nurses assess your responses and triage you more quickly and effectively.

Last year we found our nurses were visiting people up to 10 days after the onset

of flu, and it was either too late to catch the positive result or the viral load was low meaning not enough viruses for us to run other tests, such as virus isolation.

However, if you like to be prompted to report through receiving weekly surveys, you can respond essentially the same way you did last year. In other words, once you receive the survey, you can report symptoms (cough or fever) or vaccination that have already occurred

If for some reason, you lose the most recent email that has your link then contact us through email [ShiversProject@esr.cri.nz](mailto:ShiversProject@esr.cri.nz) and your individual link will be sent to you.

Unfortunately, we are unable to provide a generic link on the website as this could overwrite data that other people put into our database. Each participant has a unique link for each week.

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## **What happens in the lab?**

When we receive a swab, our scientists at ESR will use PCR (polymerase chain reaction), a technique for detecting the presence or absence of the flu virus. It is currently the most sensitive method, as PCR can make millions of copies of a viral gene if the flu virus is in the swab so the virus can be detected.

We will also try to grow the flu virus by adding a few drops of a swab into cell cultures (tissue samples pulled apart by particular mechanical or chemical methods to get to the individual cells). In this way, we will be able to isolate a whole flu virus, which is valuable for determining the virus surface proteins to see whether they have changed and whether they are no longer responding to the flu-specific antibodies. This is called antigenic characterisation. Because the virus isolation is less sensitive than PCR, sometimes the tested samples with a low viral load are not able to be grown in the lab.



Lauren Jelley (aka Wonder Woman), Biomedical Scientist, Virus Identification Reference Laboratory with her little Tiger. She and her team are dedicated to the work in the laboratory for SHIVERS-II and National Influenza Surveillance amongst other diseases.

## Further information and links about 'flu

ESR publishes the vaccine strain recommendation report annually. See

weblink: [https://surv.esr.cri.nz/PDF\\_surveillance/Virology/FluVac/FluVac2019.pdf](https://surv.esr.cri.nz/PDF_surveillance/Virology/FluVac/FluVac2019.pdf)

ESR also has a flu dashboard on their website, which shows national surveillance and intelligence reporting for flu. Reports from hospital data and a number of GP clinics around the country contribute to this data as well as Healthline calls. See

weblink: <https://www.esr.cri.nz/our-services/consultancy/flu-surveillance-and-research/> (best viewed in a Chrome browser).

One of our scientists (Namrata Prasad) at ESR has been part of a short clip put onto YouTube regarding pregnancy and flu – see if you can see some of our other SHIVERS scientists (1 min 10 secs): <https://www.youtube.com/watch?v=qfc5dGBBMWg>

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## Household Transmission Sub Study (new to 2019)

In this specific SHIVERS-II study component, we aim to understand how the flu virus spreads from person to person.

Similar to last year, when you report ILI symptoms, one of our nurses will give you a call and decide whether they need to visit you. This year the nurses have a point-of-care machine called a Veritor that takes a sample and determines whether you are positive or negative for influenza during their visit. If you are positive either through the Veritor machine or through PCR in the laboratory you will be informed further about this household sub study. If you and your household members are interested in this sub study, the nurses will provide more details to you and take you through the consent process for any interested family members.

These household members would require a pair of blood samples from them, a nasal swab and daily monitoring of any symptom development. More details will be provided by the nurses when they visit you and if you are willing for your family/household to be involved in this sub study.

## Introducing new SHIVERS team members for 2019



Cath O'Connor has joined SHIVERS-II as a Research nurse and will be visiting people with flu like illness in their homes or workplaces this season. She has vast experience as a nurse, she has worked in a fracture clinic, Emergency Departments, nursing in Outback Australia so a 'jack of all trades'. When talking about SHIVERS-II, Cath said "I am enjoying the change of pace SHIVERS brings and the opportunity to contribute to the wider influenza knowledge base while working with the scientists to ensure delivery of optimal data."

When talking about out of work: "I enjoy family centred life, time in the garden and am also a 'maker'. I sew, quilt and knit as time allows. My other love is travel with my most recent trips being to Italy and Hawaii. There are still a few bucket list

destinations to tick off and the planning is half the fun.”

Rebekah Gray at Kennedy Space Center in the Space Shuttle Simulator (Commanders chair)



Rebekah Gray has recently joined the SHIVERS-II team from the Intelligence for Action Team at the ESR Kenepuru Science Centre. She recently changed careers to work for ESR after being a secondary school teacher and Foundation Studies tutor at Whitireia Polytechnic for thirteen years. She taught Biology and Chemistry to students who aimed to enter the Nursing or Paramedicine degrees. In her spare time, she enjoys spending time with her son and partner, her dogs, and her horse. She also dabbles in photography, cooking and the garden.



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