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SIREN

SARS-CoV2 Immunity & Reinfection Evaluation

04 March 2022

Dear SIREN participants,

Welcome the fourth issue of the SIREN Study Participants' Newsletter, and our first issue for 2022. We would like to take this opportunity to share some recent SIREN updates and achievements, which have all been possible thanks to your ongoing support with the study.

In this issue, you will find:

1. Latest SIREN insights from analysing your data

The latest SIREN publication, Protection against SARS-CoV-2 after Covid-19 Vaccination and Previous Infection, has been released in the New England Journal of Medicine (NEJM) in February 2022. We would like to extend a huge thank-you to all our participants, as without you submitting your samples and returning questionnaire data, this analysis would not have been possible.

In this part of the study, we analysed data from 35,000 participants gathered between March 2020 and September 2021. This analysis therefore does not cover the current Omicron variant period. We found:

- Two doses of vaccine provided strong short-term protection against infection among those who had not had a previous infection, however, this protection waned significantly after six months.
- This analysis was conducted during a Delta variant dominant period, and therefore shows that the BNT162b2 (Pfizer) and ChadOx1 (AstraZeneca) COVID-19 vaccines protect against Delta infections
- For participants with previous infection who remained unvaccinated, we found high protection against reinfection for the first year, but after a year following infection, protection decreased.

- In contrast, in participants who were previously infected with SARS-CoV2 and then vaccinated, vaccination provided additional protection, and these individuals had very high sustained protection even well over a year after infection
- The findings demonstrate why it is important to get vaccinated, as it provides a significantly greater level of protection against infection from COVID-19, whether you have been previously infected or not, as well as the important role of boosters in mitigating vaccine waning.

We would like to thank you all for your support and effort put into SIREN. The SIREN study continues to provide important and timely insights to inform the pandemic response.

2. Update on the SIREN Patient and Public Involvement (PPI) panel

We have now successfully recruited to the SIREN PPI panel, with panel members recruited from a range of professional backgrounds and geographical regions. The panel had their first meeting in January 2022 and, going forwards, will meet every six-weeks for the remainder of the study. Each meeting will have an overarching theme and open discussion and questions are strongly encouraged from participants. This will be vital to informing our researchers about the views and concerns of our participants, and for supporting the continuation of the SIREN study. We are delighted to see this progress and look forward to keeping you updated on this exciting SIREN workstream, and about any future PPI opportunities within SIREN.

3. Changes to national PCR testing

Participants may be aware of recent changes to national guidance regarding PCR testing in the UK. We would just like to remind participants that the national guidance still recognises participants of research and surveillance studies should continue to access PCR testing to confirm a positive lateral flow test (LFT). This means that SIREN participants should continue to have a PCR test following a positive LFT. Please inform your local SIREN team if you test positive by LFT and discuss how the confirmatory PCR may be arranged. Please note that the confirmatory PCR test should be organised as early as possible and within 7 days of the positive LFT result.

4. SIREN Science Corner - How do lateral flow tests work?

Most of us are now familiar with using lateral flow tests (LFTs) for COVID-19. Some of you may also have experience with using these types of tests for other reasons, for example, in home pregnancy testing.

But how do LFTs work?

The tests can be designed to detect a particular 'target' such as an antigen or protein, or they can detect a particular 'antibody'. In the case of SARS-COV-2, the LFTs are designed to detect a specific viral protein to see if you are harbouring the virus in your nose or throat. The protein the test looks for is the N-protein, which is the nucleocapsid protein antigen of the SARS-CoV-2 virus. When you take your nose and throat swab the first thing you need to do is to make sure there is good access to the N-protein by mixing your swab in the extraction buffer which helps make the virus' proteins (including the N-protein) more detectable.

You then add a few drops of your mixed sample to the well of the test strip. The sample passes through a reagent pad first, which contains labelled-antibodies that specifically bind the N-protein. These are labelled with a coloured marker. Any available N-proteins will bind to the labelled-antibody to form an antigen/antibody complex that will then move up the nitrocellulose membrane by a process called 'capillary motion'.

As the sample and any antigen/antibody complexes move up the LFT they will pass through two detection lines; one is a **control** line to make sure the test has been performed correctly. The other one is a **test** line, which also contains antibodies against the N-protein, but this time without a coloured label. If you have a detectable level of virus in your sample, the N-protein antigen/antibody complexes will also bind to the antibodies on the test line and this means the coloured labelled antibodies can then be detected by the line turning from white to purple/pink. This means you can visually see the positive reaction and then take all appropriate steps to record your result and follow the public health guidance to keep you family, friends, and colleagues safe.

Just as a reminder, if you do get a positive LFT result, please do organise a confirmatory PCR test. Submitting a PCR test means we can officially record your positive result in SIREN, and ensures we have a sample for sequencing and possible viral culture.

5. SIREN and your professional learning

Participants might want to keep a record of their activities throughout SIREN participation, such as attendance at webinars, reading of newsletters, or other publications. These activities may count towards your continued professional development, and they can also be useful for updating your CV. SIREN can provide attendance certificates from webinar sessions to support this.

6. SAVE THE DATE! Spring SIREN Participant webinar and prize draw event

Following the success of our December webinar, we would like to invite all participants to register for the upcoming **Spring SIREN Participant Webinar on Thursday 31st March 2022 12:30 – 1:30pm**.

During the event, you will hear presentations about the latest updates from SIREN, including our recent data analyses and PPI work, as well as a dedicated 'Question and Answer' session with the SIREN research team, and our prize draw event, where we have some fantastic prizes on offer!

If you do have any burning questions you would like us to address during the webinar, you can inform us in advance by sending an email to phe.siren.participants@phe.gov.uk, marked as 'Questions for participant webinar'. There will of course also be the opportunity to ask questions on the day.

Please click this link to access the registration page for the webinar. This will also bring you to the link for entering our prize draw event, which will take place during our webinar.

All the best,
The SIREN team at UKHSA