WellKiwis influenza study

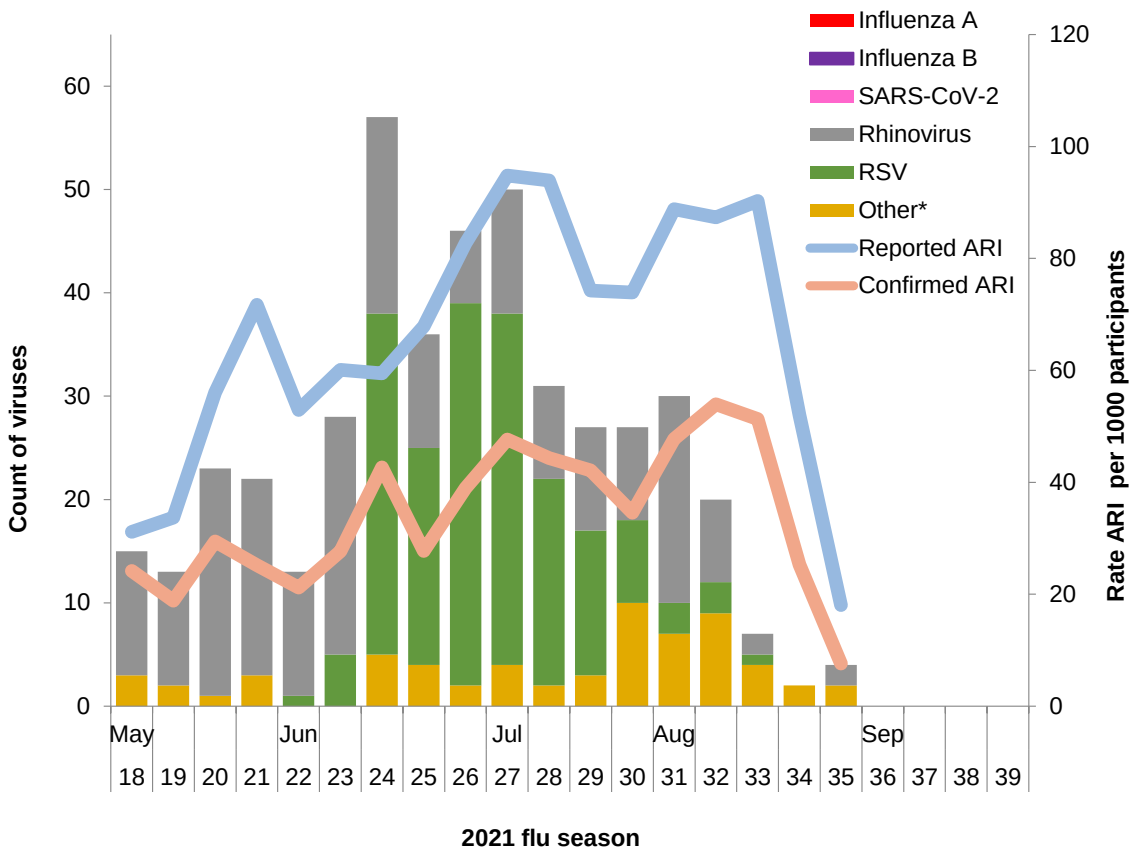
Science for Communities

WellKiwis weekly report on influenza-like illness and associated viruses

Week 35 ending 5 September, 2021

The surveillance for community cohort based influenza-like illness (ILI) provides evidence to inform public health and clinical practice to reduce the impact of influenza virus infection and other important respiratory pathogens. As part of the WellKiwis influenza study, this weekly report summarises data obtained from the WellKiwis cohorts in Wellington. The report includes incidence and viruses for community cohort ILI cases for the past week as well as the cumulative period since 3 May 2021.

Figure 1 show the weekly rate of influenza like illness (ILI) and associated viruses detected among the WellKiwis cohort participants during the winter surveillance period.



*Note: other viruses include enterovirus, adenovirus, parainfluenza virus types 1-3 and human metapneumovirus. The left axis indicates number of respiratory viruses detected among participants each week. The different coloured bars on the graph represent the count of the different respiratory viruses detected. The right axis shows weekly ILI rates - the blue line is the weekly rate of ILI reported by participants (per 1000), and the orange line the rate of nurse-confirmed ILI meeting the case definition. (Note: The case definition[1] in 2021 and 2020 has been widened compared to previous years, 2018-2019. This is to increase the sensitivity to detecting influenza as well as SARS-CoV-2 that causes COVID-19 infection).

[1] The case definition in 2021: acute respiratory illness with fever or feverishness and/or one of following symptoms (cough, running nose, wheezing, sore throat, shortness of breath, loss of sense of smell/taste) with onset in the past 10 days). And a clinician's judgement that the illness is due to an infection.
The case definition in 2018 and 2019: acute respiratory illness with cough and fever/measured fever of ≥38°C and onset within the past 7 days)

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New Zealand's public health measures (including border restrictions) have eliminated COVID-19 infection in our communities during most of the time in 2020-2021. It is important to understand influenza and non-influenza virus transmission in our communities in this post COVID-19 world. The tables 1&2 below indicate all swabs tested for influenza and non-influenza respiratory viruses from week 18 (starting 3 May) to this week.

Table 1 Non-influenza respiratory viruses among ILI cases, since 3 May 2021

Non-influenza respiratory viruses	WellKiwis Households	Wellkiwis Infants	WellKiwis Adults	Total
No. of specimens tested	279	212	193	684
No. of positive specimens (%)[1]	163 (58.4)	155 (73.1)	103 (53.4)	421
Respiratory syncytial virus (RSV)	78	64	39	181
Parainfluenza 1 (PIV1)	3	0	2	5
Parainfluenza 2 (PIV2)	0	0	0	0
Parainfluenza 3 (PIV3)	3	11	3	17
Rhinovirus (RV)	75	74	61	210
Adenovirus (AdV)	10	13	4	27
Human metapneumovirus (hMPV)	5	2	0	7
Enterovirus	2	9	0	11
SARS-CoV-2	0	0	0	0
Single virus detection (% of positives)	151 (92.6)	138 (89.0)	97 (94.2)	386
Multiple virus detection (% of positives)	12 (7.4)	17 (11)	6 (5.8)	35

Table 2 Influenza respiratory viruses among ILI cases, since 3 May 2021

Influenza viruses	WellKiwis Households	Wellkiwis Infants	WellKiwis Adults	Total
No. of specimens tested	279	213	194	686
No. of positive specimens (%)[1]	0 (0.0)	0 (0.0)	0 (0.0)	0
Influenza A				0
A (not subtyped)				0
A(H1N1)pdm09				0
A(H1N1)pdm09 by PCR				0
A/Victoria/2570/2019 (H1N1)pdm09 - like				0
A(H3N2)				0
A(H3N2) by PCR				0
A/Hong Kong/2671/2019 (H3N2)-like				0
Influenza B				0
B (lineage not determined)				0
B/Yamagata lineage				0
B/Yamagata lineage by PCR				0
B/Phuket/3073/2013 - like				0
B/Victoria lineage				0
B/Victoria lineage by PCR				0
B/Washington/02/2019-like				0
Influenza and non-influenza co-detection (% +ve)	0	0	0	0

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APPENDIX

The WellKiwis influenza study is funded by the US National Institutes of Allergy and Infectious Diseases (NIAID) (HHSN272201400006C and U01 AI 144616) through the St Jude Children's Research Hospital, Memphis, Tennessee. The study aims to understand how an adult's prior (or a child's first) flu exposure influences immunity to subsequent flu exposures with the ultimate goal of developing a longer-lasting and broad-protective universal influenza vaccine.

The WellKiwis adult cohort (i.e. SHIVERS-II) follows a group of ~2000 Wellington adults aged 20-72 years. It was established in Wellington in 2018 and is ongoing till 2021. It focuses on adults' immune responses to the flu and flu vaccinations. The study follows participants who provide one annual blood sample each year. During the influenza surveillance period (May-September), the study follows participants weekly and collects respiratory specimens from those who report influenza-like illness (ILI). These specimens are then tested for influenza, SARS-CoV-2 and non-influenza respiratory viruses. Additional samples (blood or swab) are needed only if the child has a flu or COVID-19 infection or vaccination.

The WellKiwis infant cohort (i.e SHIVERS-III) is a study about influenza immunity in children. The study is to follow new-borns over seven years to see how a child's first encounter to the flu virus or vaccine shapes their immune responses to subsequent exposures to flu as the child grows between 2019 and 2026. The aim is to enrol 600 wellington mother-infant pairs (200 pairs a year for three years). Once enrolled, study staff monitor the child's flu-like Illness during the winter period through regular surveys and ILI swab collection and testing. A cord blood is needed and one annual blood from the child each year. Additional samples (blood or swab) are needed only if the child has a flu or COVID-19 infection or vaccination.

The WellKiwis household cohort (i.e SHIVERS-IV) study follows ~300 families for up to seven years (2021-2027). In addition to understand how their prior flu exposures shape their immunity to subsequent flu exposures, it also aims to understand how the flu virus spreads from an infected person to others in a household setting. Once enrolled, study staff monitor the household's flu-like Illness during the winter period through regular surveys and ILI swab collection and testing. A once-only baseline blood is needed and one annual blood from each household member each year. Additional samples (blood or swab) are needed only if a household member has a flu or COVID-19 infection or vaccination.

The WellKiwis study is the second, third and fourth iterations of research programmes into influenza viruses and vaccines called SHIVERS (Southern Hemisphere Influenza and Vaccine Effectiveness Research and Surveillance). ESR has a long history of influenza research and led the SHIVERS-I study during 2012-2017 through the funding from the US Centre for Disease Control.

Led by ESR, WellKiwis is a multi-centre and multi-disciplinary collaboration between ESR, Hutt Valley District Health Board, Regional Public Health, Capital Coast District Health Board, University of Otago, University of Auckland, Malaghan Institute of Medical Research, participating general practices, Primary Health Organisations, Wellington Maternity Health Professionals and St Jude Children's Hospital in Memphis, USA.

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