Omicron and AREC – an HSW perspective – updated 4th February 2022

Background:

The SARS-CoV-19 virus has been following the expected course and appears to be evolving from variants that are sometimes not so easy to infect and tend to kill the human host (wild, Alpha, Beta, Delta, etc.) to a more transmissible and less virulent (Omicron) strain that will evolve the infection into an endemic, day-to-day, infection similar to a cold.

The current Delta variant tends to lodge in the smaller airways deep in the lungs and is therefore primarily spread through coughing and droplet transmission. This can be relatively easily managed though use of masks and physical distancing as the droplets have a limited range for effective transmission. The strain is also quite virulent with serious illness and death a possible outcome.

The latest Omicron strain infects the cells in a slightly different manner and is therefore targeting cells in the upper respiratory tracts and large airways. The irritation from the infection promotes sneezing, releasing much finer aerosol droplets that can evade poor fitting masks and can drift on air currents. In addition, the effects of Omicron appear to be much reduced as the infection is not as damaging to tissues in the deep lung airways.

It must be noted that the effects are only much reduced for vaccinated or previously infected people. The unvaccinated are still at a much higher risk of hospitalisation, adverse outcomes generally, and possibly death.

Commentary from some researchers in India has noted that Omicron appears to be the most transmissible virus ever, and that is saying something. Until now measles has been accepted as the most transmissible virus with one infected person in an un-masked room infecting 90% of the people present! On that basis once Omicron is embedded within the community it will likely spread very quickly across New Zealand, eventually becoming endemic.

A confounding factor is that current data is coming from countries that have had relatively high levels of CV-19 infection compared to New Zealand. This means that despite our relatively high levels of vaccination, the infection will likely spread quite quickly and the sheer numbers of people getting infected will generate a significant number of hospitalisations, despite a lower level of acuity.

Action point: *Effective the date of this advice anyone with upper respiratory tract cold type symptoms and/or lower respiratory tract infection that may include coughing, plus other signs/symptoms as per MoH advice, should be suspected of having active Covid-19 and should get tested in accordance with that advice and stand-down from AREC activities.*

Staff availability

Whilst the Australian experience appears to show 20-30% of responders become unavailable due to infection, this has to be seen in the context of their lower rates of vaccination. As noted above a higher level of prior infection may actually slow down the spread of Omicron so nothing is certain.

My guess is that in New Zealand, with our spread-out communities and more highly vaccinated population, we may have reduced impacts.

Down-time due to infection is likely to be shorter, though a conservative approach to limit further spread within the wider AREC, Police and LandSAR teams would be a safe approach.

Typical hospital stays for Omicron patients who require that level of care is around 5 days versus 15 days for a Delta patient with limited need for assisted ventilation indicating the much-reduced severity of outcomes (see summary of paper attached).

Action point: *All AREC members are to follow MoH advice in regard to isolation, testing, and stand-down periods. Current advice remains valid. If in doubt do not attend any AREC activities including meetings, training, SAREX and SAROP*.

PPE and infection controls

Given the subtle nature of the Omicron profile, and the fact that vaccinated people may be unwittingly carrying an active, easily transmissible infection, caution needs to be exercised by everyone.

All AREC responders must have an understanding of infection controls and the HSW strategy in place for the activity being undertaken. This will require an AREC team huddle using the Stop-Think-Plan-Communicate-Act strategy.

AREC need to follow the Lead Agency (Police, RCCNZ, NEMA) safety plan so long as the requirements do not fall below AREC and/or MoH minimum requirements. If this is not the case AREC personnel must speak up at the time and raise their concerns. If the briefed requirements continue to fall below the AREC/MOH standards the issue/incident must be reported to HSW@arec.nz for investigation.

Additional strategies over and above the basic CV-19 prevention techniques of: physical distancing, washing hands, mask wearing, and limiting physical interaction with others unless you have to; could include:

- If possible, creation of several AREC IMT teams in order to minimise cross contamination. AREC personnel could follow this strategy at the District level to avoid personnel mixing across different operational teams by having different personnel attend each SAR activity.
- Requesting that each IMT have a designated HSW Advisor appointed who can monitor and ensure best CV-19 defensive practices are applied, as well as other standard HSW functions. The Incident Controller would normally be the person responsible for this appointment.
- Ensure AREC at IMT are only set up in suitable areas that will minimise the chances of cross-infection with free airflow, spread out seating, and minimal close interaction.
- Reduce AREC persons present in an IMT to the bare minimum. Having various parts of each IMT physically separate and communicating over common software platforms including: SARTrack, chat, video conferencing (Zoom, MS Teams, Go to Meeting, etc.) or mobile type apps. For example: AREC personnel in a separate room or location logging all comms into SARTrack with no paper messages handed around the room or between locations.
- Screen AREC personnel at an IMT prior to entry to minimise risks. This could require completion of a brief questionnaire and review by the AREC Team Leader.
- Follow the latest Ministry of Health (MoH) advice as the situation may become fairly fluid as cases rise. Current strategy is to ensure health and hospital resources do not get overwhelmed. If in doubt about their current health status, AREC staff need to err on the side of caution and not offer or agree to attend an IMT or SAR activity.

Action point: *Liaise with the Lead Agency prior to deployment to ensure that a Safety Plan is, or will be, in place for each IMT. Ensure all deploying AREC staff have the appropriate PPE including alcohol or similar based hand sanitiser and face masks (minimum surgical type, preferably N95 grade).*

Action Point: *No AREC member or anyone associated with AREC should present to a response activity or remain at that activity if they feel sick or look unwell. If a Covid-19 infection is suspected or likely the person should immediately follow MoH advice and seek further diagnostic testing as necessary.*

If there are any further questions or clarification is required, please advise.

David WILKINS
AREC HSW Advisor
HSW@arec.nz

Supporting information follows:

Omicron and AREC

Supporting research information:

The latest information is now showing how much closer Omicron is to the common cold and how less virulent it is. In other words, the risks to members from the Omicron variant should be substantially less than has been previously thought. Will this change what we want to do? I am not yet sure.

A **Pre-Print study** out of Southern California had the following results:

Group	Omicron	Delta
Number in study sample	N = 52, 297 (+ve Omicron cases)	16,982 (+ve Delta cases)
Hospital inpatients (for any reason)	235 (0.44%) = 44 per 10,000 cases	222 (1.3%) = 130 per 10,000 cases
Mean follow up (time in hospital)	5.5 days	15.8 days
Admitted for CV-19 specific treatment	88 (37% of admissions)	189 (85% of admissions)
Number into ITU (Intensive care)	7 (8% of admissions for CV-19)	23 (12% of admissions for CV-19)
Number ventilated	0	11
Deaths	1 = ~2 deaths per 100,000 cases	14 = ~825 per 100,000 cases

Full paper here::https://www.medrxiv.org/content/10.1101/2022.01.11.22269045v1.full.pdf

Caveat: This paper utilises research data from an area that has had a much higher base level of CV-19 infection than New Zealand. This may influence final proportions facing different outcomes.

Simplified takeaway –

- Fewer patients with Omicron end up in hospital (approx. 1/3 compared to Delta admissions)
- If admitted for CV-19 specific treatment, Omicron cases are less than half Delta and the duration of stay in hospital is around one-third the duration for a Delta case.
- Number ending up in Intensive Care are similar (8% versus 12%) however because Delta attacks deep in the lungs around half the Delta patients require ventilation.
- Chances of dying from Omicron are significantly lower (approx. 1 Omicron death per 413 Delta deaths).
- No information yet about any long Covid effects from Omicron.

Other good news:

It has now been noted that there is some transferred immunity from previous infections by the common cold. The scientists are quite specific in that it has to be infections by one or more of the four (or is it six) SARS-Corona (SARS-CoV) versions of the common cold. These infections cause the creation of a range of specific T-cells, the longer lasting protection system against viruses.

The study was quite small (52 subjects) but indicates how a more useful vaccine could be created that creates antibodies for the core elements of the virus, not just the spike proteins – see original article here: https://www.imperial.ac.uk/news/233018/cells-from-common-colds-cross-protect-against/ and the original paper at https://www.nature.com/articles/s41467-021-27674-x – an article that is guaranteed to bamboozle most people.

Whilst our current vaccines are set up to react to the Spike proteins (Pfizer = partial spike and Astra-Zeneca = full spike), the T-Cells we get from common cold infections cover a wide range of other components of the SARS-CoV strains.

The common cold T-cells noted as significant were those that attack: the spike, the nucleocapsid (surrounds the RNA in the core of the virus), the viral membrane (wall of the virus), and ORF1 (the name of the gene that codes for several non-structural protein elements within the virus, basically a set of enzymes that drive various activities when the virus is replicating).

Apparently the most effective T-cells are those that attack the nucleocapsid. Current thoughts are that future vaccines may well encode for elements such as the nucleocapsid as that method is now appearing to offer the widest protection against most variants. The reason is that most mutative variation tends to take place on surface features such as the spike proteins, meaning most virus share the same core building block elements.

Who knows what the drug companies may want to do? My cynical side thinks they will want to sell multiple cures for each future virus not a single cure that wipes out their future market opportunities. Let's see what happens.

Also, research is now showing that prior infection by SARS-CoV-19 is quite protective against future hospitalisation if ever a variant arises. The data is based on a study that compared hospitalisations due to the Alpha and Beta versus Delta and showed infection with the earlier variants as protective against Delta.

To date there is insufficient data to demonstrate the level of protection against Omicron.

Other sources of information

If you want any further information there are multitudes of sources on the internet.

Two sources that I believe are reputable based on their presentations of published papers are:

Drbeen Medical Lectures – no it isn't Rowan Atkinson - https://www.youtube.com/c/USMLEOnline.

His real name is Dr Mobeen Sayed (https://www.drbeen.com/team/) and he really gets into the depths of the research. He produces lots of videos and uses home-made sketches to illustrate the points in an easy to digest manner. His target audience is Doctors and scientifically minded people but the information is always the latest and he lists all the papers if you want to read the originals.

Dr John Campbell (PhD) – https://www.youtube.com/user/Campbellteaching

Whilst not a medical doctor he is a retired nurse tutor with a PhD and has a good grasp of things medical as well as research methodology. He has a huge subscribed following and puts out a daily video of the latest information. He puts all his notes into the commentary area below the video.

If there are any further questions or clarification is required, please advise.

David WILKINS
AREC HSW Advisor
HSW@arec.nz