SARS-CoV-2 endgame: attitudes and predictions of Australian and New Zealand infectious diseases and microbiology specialists

Australia and New Zealand have had temporary success in limiting the spread of COVID-19 caused by SARS-CoV-2. This is in contrast to large case numbers and mortality reported worldwide. As of 10 June 2020, Australia has had 7267 cases and New Zealand 1504 cases, with several Australian states/territories reporting no new local cases in recent days and there are no remaining active cases in New Zealand. However, being a novel virus, our population remains susceptible to this infection.

SARS-CoV-2 transmission dynamics in the future will be determined by the reopening of international borders, extent and duration of immunity from this virus, possible cross-immunity from other beta-coronaviruses, and the development of effective vaccines and therapeutics. These will determine if SARS-CoV-2 will remain perennial, seasonal, sporadic or disappear altogether. Despite our current success, governments and the healthcare systems remain cautious in returning to the norm as the future of COVID-19 in Australia/New Zealand remains uncertain.

Given these uncertainties, we conducted an online survey through Ozbug among the members of the Australasian Society for Infectious Diseases (ASID). It includes approximately 1000 physicians and trainees affiliated to Infectious Diseases, Microbiology and related fields, predominantly from Australia and New Zealand. The aim of the survey was to understand the perception of these specialists of the future of SARS-CoV-2 in Australia/New Zealand to provide an outlook, while awaiting serosurveys and effective vaccine development. The survey was conducted between 21 and 26 May 2020. We received 254 replies, 207 from consultants or equivalent, 39 from trainees and 8 from unclassified roles. A total of 242 responses was received from Australia and 12 from overseas (including 10 from New Zealand). The results are presented in Table 1.

A total of 47% (120/254) believe that Australia/New Zealand will continue to sustain the current success in controlling COVID-19 case numbers. More trainees (27/39, 69%) and the consultants with <10-year practice experience (53/94, 56%) predict the possibility of peak/peaks compared to consultants with >10-year experience (49/113, 43%), P-value = 0.01. Large increases in case numbers may lead to re-initiation of strict social isolation and distancing measures that can further negatively impact the economy and the healthcare systems.

The majority (90%) of the survey responders believe SARS-CoV-2 will remain endemic. It is the seventh coronavirus implicated in human infections. HCoV 229E, NL63, OC43, HKU1 are the four current endemic coronaviruses causing 15–20% of upper respiratory tract infections. SARS-CoV-1 (causative agent of the 2002–2003 severe acute respiratory syndrome) and MERS-CoV (causative agent of the Middle East respiratory syndrome) are the fifth and the sixth human coronaviruses. It is speculated that the current endemic HCoV-OC43 might have caused the 1889–1890 pandemic. Infections that are mostly mild or subclinical are more difficult to control, leading to sustained transmission and contribute to endemicity.

ASID Ozbug members consider that the development of a long-lasting effective vaccine against SARS-CoV-2 is unlikely (95% of responders). A total of 35% predict the duration of protection of a potential vaccine to be less than 1 year and 55% predict 2–5 years. Experimental infection with endemic betacoronavirus HCoV-229E did not lead to protection against reinfection 1 year later in the majority of cases, whereas SARS-CoV-1 (the closest relative of SARS-CoV-2) leads to a neutralising antibody response that persisted for up to 2 years. Epidemiological studies through serosurveys of those already infected may provide data on the extent and duration of protection. Vaccine trials will also need to evaluate benefits in those already infected.

The survey findings are consistent with known epidemiological and serological data from previous human coronaviruses. Our results from Australasia’s experts in...
infectious diseases complement the projected transmission dynamics based on mathematical modelling.\textsuperscript{1} The survey may also provide guidance to other clinicians and advocates when faced with these questions.

In summary, about half of Australian/New Zealand experts predict there will be no further significant epidemiological peaks in COVID-19 case numbers, and the majority predict that SARS-CoV-2 will become humanity’s fifth endemic coronavirus, with a potential vaccine likely requiring dosing every 1–2 years.

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