

Pacific island nations face an urgent need for actions and future research on COVID-19

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WHO declared COVID-19 disease a public health emergency in January 2020, with human-to-human transmission quickly spreading across countries setting off a global pandemic. Mass vaccination campaigns, combined with public health and social measures slow down transmission, limit the number of sick patients and avoid the saturation, and collapse, of hospital capacities. This strategy appeared potentially successful, as observed in Israel, in which the elevated proportion of vaccinated people enabled local authorities to avoid a strict confinement of the population.¹ Alternatively, countries like New Caledonia, Australia, and New Zealand promoted a “zero COVID-19” objective, avoiding virus introduction with mandatory quarantine of people entering the country as well as a strict “test, trace, and isolate” strategy applied to the few cases introduced in the general population. Mass vaccination and border closures were key actions implemented by Pacific governments to protect their populations. The emergence of the B.1.617.2 (Delta) variant requires rethinking of this strategy due to its high transmissibility and short incubation period.²

As of October 31, 2021, 17 countries are considered COVID-19-free (i.e. no new cases in the past 42 days) among which 12 are Pacific nations (Cook Islands, Kiribati, Federated States of Micronesia, Marshall Islands, Nauru, Niue, Pitcairn Islands, Samoa, Solomon Islands, Tokelau, Tuvalu, and Wallis and Futuna). Epidemiological survey in the Pacific area relied on³ and data were extracted on November 1, 2021 from.⁴ The COVID-19 free status is attributed to territorial specificities including small population sizes, low COVID-19 prevalence of surrounding countries, geographical isolation, and a swift border closure response in the earliest stages of the pandemic. Since international exchanges are soon to be likely necessary due to increasing socioeconomic

pressure, the capacity of these countries to maintain their isolation is a major issue. Recently, preventive strategies appear less effective with the Delta variant, as noted in New Caledonia where, despite strict control measures, community transmission transpired, prompting local authorities to re-impose a strict lockdown as of Sept. 6th, 2021, one day after the discovery of the first local cases.

Attention is needed to mitigate COVID-19 impact upon Delta variant introduction in Pacific countries for at least three reasons: (i) the proportion of vaccinated people in some of these countries is low (e.g. 19.3 % of the eligible population in Vanuatu on Oct. 31st, 2021, according to,⁵ and 25.0% in New Caledonia at the date of the first COVID-19 case record, on Sept. 6th, 2021). In a setting with low rates of vaccination, high death rates may be observed such as that seen in Tahiti where a 4.5 fold increase in death rates was observed in Aug. 2021,⁶ Massive effort on vaccination campaigns should be promoted in the Pacific, along with educative and pedagogic actions to obtain community engagement. (ii) Pacific population have a high prevalence of diabetes or obesity,⁷ increasing the risk of COVID-19 complications. (iii) Eventual re-opening of these countries to international travel will undoubtedly lead to the introduction of SARS-CoV-2 variants. In juxtaposition of current research that is conducted after SARS-CoV-2 introduction, a real-world investigation aiming at following viral evolution and dissemination in a vaccinated (but naïve from a viral stand point) population is still conceivable in some Pacific countries. Importantly, this work could be done at both pathogen and host levels. Indeed, immunological paradigms teach us that host responses to pathogens require antigen presentation by class-I and class-II HLA (Human Leucocyte Antigen) genes, the polymorphisms of which has been associated to diverse forms of COVID-19.⁸ A global survey of the viral variants, along with an extensive typing of genes encoding the HLA-I and II, KIR (Killer cell immunoglobulin-like receptors), ABO blood groups, Angiotensin-converting enzyme (ACE,

The Lancet Regional Health - Western Pacific
2022;18: 100326
Published online 12 December 2021
<https://doi.org/10.1016/j.lanwpc.2021.100326>

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the SARS-CoV-2 Receptor) and various cytokines⁹ will increase our understanding of the dynamics of the SARS-CoV-2 dissemination. Such investigations may provide invaluable fundamental epidemiological and immunological insights, to better understand and manage future pandemics. Of note, HLA alleles are poorly documented for Melanesian populations¹⁰. This effort would then provide the HLA community a large set of novel alleles and enrich public resources for a better knowledge of autoimmune and infectious diseases. This would also enhance our understanding of adaptive history of Oceanian populations,¹¹ whose complexity results from admixture between people of different Austronesian and Papuan ancestry and recently, European.

This letter aims to put the Pacific countries at the forefront of a COVID-19 massive vaccination campaign and stimulate research funding to explore the links between Pacific population genetics and chronic/infectious diseases.

Declaration of Interests

The authors have no conflict of interest to declare

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