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Board of Education and Assessment Trainee Poster Prize

AIRBORNE TRANSMISSION OF SARS-COV-2 LINEAGE B.1.617.2 (DELTA VARIANT) WITHIN A TIGHTLY MONITORED ISOLATION FACILITY

Andrew Fox-Lewis¹, Felicity Williamson², Jay Harrower², Xiaoyun Ren³, Gerard J. B. Sonder^{3,4}, Andrea McNeill³, Joep de Lig³, Jemma L. Geoghegan^{3,5}

¹Microbiology Department, Middlemore Hospital, Counties Manukau District Health Board, Auckland, New Zealand; ²Auckland Regional Public Health Service, Auckland District Health Board, Auckland, New Zealand; ³Institute of Environmental Science and Research (ESR), Porirua, New Zealand; ⁴Department of Internal Medicine, Amsterdam Infection and Immunity Institute, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; ⁵Department of Microbiology and Immunology, University of Otago, Dunedin, New Zealand

To mitigate importation of COVID-19 into Aotearoa New Zealand, international arrivals are quarantined and undergo SARS-CoV-2 screening, with those testing positive transferred to a managed isolation facility (MIF). Solo traveller A and individual E from a five-person travel group, BCDEF, had positive screening tests. Following transfer to the MIF, A and BCDEF occupied separate rooms on opposite sides of the corridor, over 2 metres apart. Individuals BCD subsequently tested positive, with viral sequences matching A and distinct from E. The MIF was the only shared location of A and BCD, and they had no direct contact. Security camera footage revealed four 3–5 second episodes of simultaneous door opening during A's infectious period (mask wearing when opening doors is mandatory). The cumulative evidence of this comprehensive public health investigation demonstrates SARS-CoV-2 transmission between A and BCD whilst in the MIF, with airborne transmission the only plausible explanation. Genomic epidemiological studies such as this provide the best evidence currently available to support airborne transmission of SARS-CoV-2. These findings are of global importance for public health interventions and infection control practices relating to COVID-19, and add key information to the growing body of evidence supporting a primarily airborne route of transmission.

SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 (SARS-COV-2) ANTIBODY KINETICS AFTER BNT162B2 VACCINATION

Ravin Hettiarachchi, Kartik Naidu, Suzanne Payne, Juliette Holland

Department of Microbiology, Laverty Pathology, Sydney, NSW, Australia

Background: Phase 1a of Australia's COVID-19 vaccine roll-out strategy included frontline healthcare workers who were eligible for two doses of BNT162b2 (Pfizer-BioNTech) vaccine. In November 2021, booster doses of BNT162b2 were also

recommended 6 months after the second dose due to waning immunity.

Methods: Molecular microbiology staff at Laverty Pathology were vaccinated in March 2021. This study examined serological responses to SARS-CoV-2 vaccination on Abbott Alinity semi-quantitative IgM, quantitative IgG spike protein and qualitative IgG nucleocapsid assays. Serum was drawn before and 1-week after the first dose, before and 1-week after the second dose, then at regular intervals including just before and 2-weeks after the third dose.

Results: All 21 participants had negative serology at baseline. IgG was detectable in all participants prior to the second dose and peaked at day 30 in most participants. All participants had detectable IgM at day 30, and 8/19 at day 60. Quantitative IgG levels were significantly lower at 6 months compared to peak levels [median (range) 1470 AU (456–8038 AU) vs 23056 AU (4255–>40000 AU) $p < 0.0001$].

Conclusion: IgG peaked at 30–60 days before waning prior to a booster dose. IgM was still able to be detected in 42% of participants at 60 days, limiting its value as a marker of reinfection in highly vaccinated populations.

A COMPARATIVE STUDY OF DIAGNOSTIC ACCURACY IN 3,026 CASES OF MATCHED PLEURAL EFFUSION CYTOLOGY AND PLEURAL BIOPSY WITH CLINICAL CORRELATION

Joshua J. X. Li¹, Ivan K. Poon¹, Ronald C. K. Chan¹, Joseph S. H. Choi¹, Joanna K. M. Ng¹, Katsie T. Tang¹, Yolanda Y. H. Wong¹, Ka Pang Chan², Wing Ho Yip², Gary M. Tse^{1,3}

¹Department of Anatomical and Cellular Pathology, Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong; ²Department of Medicine and Therapeutics, Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong; ³Department of Pathology, North District Hospital, Sheung Shui, Hong Kong

Introduction: The aetiology of pleural effusion is diverse. Pleural biopsy and effusion cytology represent the two major methods of investigation and tissue diagnosis. A large cohort of matched pleural biopsy and effusion cytology with clinical follow-up was reviewed to report the clinical associations and cause of pleural effusion, and compare the performance these two methods.

Methods: Pleural biopsies and effusion cytology specimens over a period of 20 years were retrieved. Cytology specimens collected within seven days of pleural biopsy were matched ($n=3,026$). Reports were reviewed and the underlying cause for pleural effusion was determined by hospital disease coding and clinical data.

Results: The leading cause of benign effusion was tuberculosis ($n=650$), parapneumonic effusion ($n=524$) and heart failure ($n=184$). Malignant pleural effusion (MPE) was more common in older females ($p < 0.001$) and were mostly due to lung cancer