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EDITORIAL

Focus on SARS-CoV-2 and COVID-19

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Emerging infections, particularly those that have occurred in pandemic proportions, have caused concern for governments and communities for thousands of years. Pandemic ‘plague’ (possibly typhus) in 430 BC in Athens during the Peloponnesian war likely killed two-thirds of the local population, whilst bubonic plague in the 14th century killed one-third of the world’s population. As with many of their predecessors, these were caused by bacteria, and in true contagion-style, able to take flight in the setting of severe crowding, poor public health control, limited (if any) antimicrobial intervention, and in association with major events such as wars. The word ‘quarantine’, or a period or place of isolation, comes from the Italian word ‘quaranta’ which means 40. In the mid-1600s the Italians stopped people from disembarking from ships for 40 days if it was believed there was a disease outbreak onboard, a legacy we still embrace today.

In contrast, more recent pandemics have been dominated by viruses such as influenza H1N1 and H3N2, localised epidemics by Ebola virus, severe acute respiratory syndrome coronavirus-1 (SARS-CoV-1), MERS-CoV, and now, SARS-CoV-2, the causative agent of COVID-19. These can often be directly transferred from animals as occurs with other zoonoses, and have occurred in settings of modern public health systems, where antimicrobial agents of varying efficacy cannot be readily deployed, and in the absence of any identifiable major global event.

We welcome this collection of papers from colleagues on SARS-CoV-2 and COVID-19 from both the diagnostic laboratory and clinical viewpoints. Our aim is to provide up-to-date perspectives at a national level on this significant pandemic, and lessons learned during the greater part of the current pandemic. The exponential growth in manuscripts globally on SARS-CoV-2 means that no single cross section of papers will provide all the important information. However, by having a single edition, with broad focus on human pathology of SARS-CoV-2 infection, we aim to provide the readers of *Pathology* with insights from different areas of

COVID-19 diagnosis. These include an overview of the variety of diagnostic tools and their application as summarised by Gulholm *et al.*,¹ together with technique-focussed articles on molecular diagnostics (Williams *et al.*,²), virus culture (Stelzer-Braid *et al.*,³), serology (Davidson *et al.*,⁴ Tan *et al.*,⁵ Chua *et al.*,⁶) and point-of-care testing (Robosa *et al.*,⁷). Other important laboratory-based aspects are addressed, including biosafety (Kaufer *et al.*,⁸) and the issues around sample pooling (Chong *et al.*,⁹) for SARS-CoV-2 detection. Clinical perspectives are provided on SARS-CoV-2 infection in children as outlined by Williams *et al.*¹⁰ Other laboratory metrics are addressed as Correspondence (Basile *et al.*,¹¹ Kirkland *et al.*,¹² Wang *et al.*,¹³), as well as the histopathology of cutaneous COVID-19 lesions (Alsibai *et al.*,¹⁴) and emergence of unusual COVID-19 related clinical syndromes (Duarte *et al.*,¹⁵).

Substantive progress continues to be made in the arena of diagnostic tests for SARS-CoV-2 infection with improvements in molecular diagnostics, rapid antigen detection tests and serological assays. As for all diagnostic tests, the clinical utility will depend on clinical context and, importantly, on disease prevalence which should inform their use. Delineation of case clusters using next generation sequencing methods are critical for timely infection control and public health measures. These aspects have not been included in this mini collection but are described elsewhere.^{16,17}

We conclude with two thoughts. Given the rise in cases in some regions of the Asia Pacific and their likely adverse social impact, Australia is a good position to deploy assistance if required. Branley *et al.*¹⁸ have provided one example of such deployment to a remote Australian quarantine setting. We continue to be faced by the risk of pandemics and we must learn from our observations at present with SARS-CoV-2 infection, and resulting COVID-19 disease. P.G. Wodehouse wrote in 1926: ‘*To the thinking person nothing is more remarkable in this life than the way in which humanity adjusts itself to conditions which at their outset might well have appeared intolerable*’. Our ability to tolerate, as well as learn and share in a collaborative manner new knowledge about SARS-CoV-2, and to harness this knowledge to reduce human suffering, is something of which we can be proud.

Hand-in-hand, however, we must also be cognisant that science changes constantly and hence (as noted by the Honourable Mr Justice Archie Campbell in The SARS Commission Executive Summary) 'the point is not about who is right and who is wrong ... we should not be driven by the scientific dogma of yesterday or even the scientific dogma of today. We should be driven by the ... principle'¹⁹ to take every reasonable step to reduce risk of COVID-19 infection. During the coming months and years, this, together with use of knowledge in designing diagnostic tests, research into antivirals, vaccines and novel interventions, will be important in how we improve the outcomes of this pandemic.

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