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EDITORIAL

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COVID-19: Lessons to be learnt from a once-in-a-century global pandemic

The year 2020 will mark a once-in-a-century global event: the outbreak and pandemic of COVID-19. On the 31 December 2019, the World Health Organization (WHO) reported a cluster of pneumonia-like cases of a novel coronavirus zoonosis in Wuhan City, Hubei Province, China. The outbreak was due to a new or novel coronavirus, which would later be called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Thirty days later, the WHO declared COVID-19 a global health emergency of international concern (World Health Organization, 2020a), and 71 days after first being reported, it was declared a global pandemic (World Health Organization, 2020b). The acute respiratory infection with vague, indeterminate and undifferentiated and signs and symptoms of acute respiratory illness, such as fever, cough, sore throat, dyspnoea and myalgia, swept the globe via human-to-human transmission (Chan et al., 2020; Ghinai et al., 2020; Kakimoto et al., 2020; Li et al., 2020; Phan et al., 2020) bringing about global disruption to social, economic and health systems which has not been seen for a 100 years.

COVID-19 has seized the attention of everyone—media, politicians, policymakers, economists and the general public—in a way that few worldwide health events have done and has dominated 24-hr news cycles for months. The headlines and bulletins for all news and media channels have led with updates on the spread of COVID-19, moving from the initial epicentre in China to northern Italy, Iran, Spain, the United Kingdom, and more recently, the USA. The global and regional tally of the number of confirmed cases and the horrific death toll seem incomprehensible and are expressed in numbers so huge that we need to use a log scale to record them. Terms such as "self-isolation," "containment," "quarantine," "flattening the curve," "social distancing," "lock down," "elimination" and "home schooling" are now part of our everyday lexicon.

In a few short weeks, we have witnessed extraordinary social and economic disruption in global efforts to stop the spread of COVID-19. Those who can, work from home. Those that can not, often work in situations where social distancing can be difficult, and thus potential exposure to infected persons can be high. Millions of highly skilled full-time employees have joined with the casually employed and contractors for state and philanthropic emergency relief for sustenance. Governments around the world have introduced economic stimulus programmes to avoid recession or depression of their economies (Cavanough & Tai, 2020). Other strategies, once unimaginable, have been implemented to delay the spread of the disease such as ensconcing the homeless in hotels, closing of state borders, and the abrupt suspension of air travel. Occupations often ignored or taken for granted such as cleaners and supermarket stockists have been relegated to an essential services status.

While the speed and consequences of the COVID-19 pandemic may seem to have come out of nowhere, for those who work in infection prevention and control (IPC), it comes as no surprise or shock. SARS-CoV-2 is not the first coronavirus infection in humans. It was not that long ago that we had the outbreak and elimination of severe acute respiratory syndrome coronavirus (SARS-CoV-1) in 2002/2003, and the outbreak Middle East respiratory syndrome coronavirus (MERS-CoV) in 2013 which has occurred sporadically ever since (de Wit, van Doremalen, Falzarano, & Munster, 2016; Yin & Wunderink, 2018). The global pandemic of COVID-19 has resulted in more than 3.1 million cases and 227,000 deaths (Center for Systems Science & Engineering, 2020), eclipsing the previous two coronavirus outbreaks. In comparison, there were 8,098 cases and 774 deaths with the SARS-CoV-1 outbreak and the MERS-CoV outbreak has reported 2,494 cases and 858 deaths (Mahase, 2020).

A pandemic such as COVID-19 has always been on the radar; as in not if, but when. Many countries have been preparing for an influenza-type pandemic for some years, although some countries have been better prepared than others. The outbreaks of SARS-CoV-1, MERS-CoV, Ebola and H1N1, and the lessons learned from each have been noteworthy: importance of good hygiene (hands and surroundings), testing when possible, isolation of those infected, personal protection equipment for healthcare workers and others involved in the care of the infected, expurgated search for treatments, and vaccines. The 2019 Global Health Security (GHS) Index published a report on the global health security capabilities of 195 countries, including assessment of pandemic preparedness (Cameron et al., 2019). In this report, Australia ranked 4th on the GHS Index Score behind the United States, the UK and the Netherlands. These rankings will undoubtedly be subject to scrutiny and review given the success, or otherwise, of national responses to COVID-19.

One of the complexities of mounting national responses to such a pandemic is that the lead is taken by political leaders on advice from health experts, and assisted by health policymakers. It can be challenging for political leaders to understand the need to be adaptable, agile and quick to change tack, should information or circumstances demand it in order to respond adequately. Even more challenging is that what we "know" today may and will change tomorrow as new evidence emerges. Balancing strategies to achieve good health outcomes with the opposing economic consequences of those

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strategies is also problematic in dealing with outbreaks of infectious diseases. The economic consequences of managing outbreaks in a single region or jurisdiction are can be quite problematic. Doing so on a global scale is, however, quite something else, with grave predictions for the future of the global economy. In May of 2020, the International Monetary Fund reported that it has secured more than $1 trillion dollars in lending capacity to service unprecedented emergency financing requests from over 90 countries(Georgieva, 2020).

COVID-19 is a new pathogen, and the race and thirst for knowledge about COVID-19 is like nothing we have ever seen. While there is much that we do not know about COVID-19, there is much we do know about coronaviruses and respiratory infections more broadly. This can help us prevent the spread, plan for a pandemic and manage infected patients while we seek a treatment or even a cure and, importantly, a vaccine. In IPC, we know what works to prevent and control the spread of contagion based on key principles and concepts. Most of these principles have not changed for centuries are taught to children in formative years, and form the backbone of contemporary care. We use them together with the emerging and available evidence and considering our experiences with other outbreaks. Arguably the most notable of these is the "chain of infection" and that our effort to arrest and contain an outbreak is based on breaking the chain.

Fundamental principles such as hand hygiene, respiratory etiquette and staying home if unwell are core to the response to COVID-19. Healthcare workers are well versed in the use of isolation to prevent spread of infection. Education and training of healthcare workers in the use of personal protection equipment such as masks, gloves, face shields and gowns is mandatory in many settings, even before the outbreak of COVID-19. It appears that much of the anxiety and stress associated with the outbreak among healthcare workers has been not only the ready supply of the equipment but also relative unfamiliarity and lack of confidence in using it correctly.

We continue to rely on the available and relevant evidence, guided by basic infection control principles that we know work. However, as new information emerges it can be confusing as our experience changes, especially if the new information is conflicting. It can be challenging for political leaders to understand the need to be adaptable, agile and quick to change tack, should information or circumstances demand it. Even more challenging is that what we "know" today may and will change tomorrow as new evidence emerges. Some of this includes the extent to which humans develop a protective immune response to COVID-19 via antibodies (The World Health Organization, 2020), the extent to which asymptomatic people can spread the infection (Bai et al., 2020; Kimball et al., 2020), whether the use of face masks by asymptomatic members of the community can affect transmission (Feng et al., 2020), the significance of the loss of smell as an early predictive or differential symptom of disease, the role of herd immunity and whether infection confers immunity, and if so, for how long.

Modelling by epidemiologists can help with devising strategies for containment, mitigation and elimination. Such modelling draws on the limited available but emerging data and promulgates scenarios based on a range of varying assumptions. While useful, modelling will never give all us the answers. Rather, it gives us insight into the future might look like given particular circumstances. Models include projected outcomes with no containment measures in place; others with changing elements of containment in place over time. Modelling for the worst-case scenario is important in the early days of a pandemic to understand what resources and capabilities might be required.

Strategies like social distancing and quarantining can take time to show an effect on transmission rates based on the incubation period of infection. In the case of COVID-19, the incubation period is 14 days, with the average between 5 and 7 days (Lauer et al., 2020). Understanding which measures have worked in decreasing transmission can be difficult to ascertain when many strategies are applied either simultaneously or within short periods of time. When urgent measures are required as lives are at stake, there is often little time and information available to determine the efficacy of prevention measures using the traditional scientific methods. Comparisons of strategies undertaken in other countries are influenced as much by social or population factors as by the individual strategies themselves. The epidemiology of COVID-19 is different between populations and demographics (Roser, Ritchie, Ortiz-Ospina, & Hasell, 2020). Not all countries, or even geographic areas within a country, will have the same transmission course due to demographics, health system and prevention responses, although many are following similar trajectories.

Containment, mitigation and elimination are different phases in outbreak management and disease control. The central aim for all is to arrest community transmission and to break the chain of infection. Arresting community transmission is an essential strategy required to give health services the ability to develop capacity such as freeing up hospital beds or increasing resources and staffing for intensive care services. Once the number of new cases has stabilised, there can be a move to mitigation strategies which might not necessarily stop the spread, but can help to protect those most at risk of severe disease by isolating suspected cases and their households, while continuing to implement social distancing measures for older people and others at high risk. Mitigation strategies also require planning during the suppression stages. These include increased surveillance through testing in the wider community, better and more efficient contact tracing and concerted responses to outbreaks when they emerge. The aim of all these strategies is to keep each infected person from infecting fewer than one other person. Until this can be achieved, the infection will continue to spread.

There has been much made of the concept that "we are all in this together" as though everyone has equal risk of acquiring and surviving the virus. In reality, some people are more likely than others to be infected and typically older people and those with chronic illness such as diabetes, hypertension and respiratory disease will be associated with higher morbidity and mortality. Other populations at high risk of infection include those living and working in confined spaces such as nursing homes and prisons, cruise liners, refugee camps, people travelling on crowded public transport, and even

politicians meeting and greeting. Of great concern are the socio-economically disadvantaged communities around the world where individuals with poor health status, poor access to health services, and are subject to conscious and unconscious discrimination receive poorer quality or delayed treatment (Ahmed, Ahmed, Pissarides, & Stiglitz, 2020). The lack of access to health care will mean more morbidity and more mortality. Individuals and families in low-income communities may be unable to practice social distancing and self-quarantine and are often forced to choose between their health and income (Alston, 2020; Noppert, 2020).

Nonhealth-related consequences of COVID-19, such as financial economic recession and depression, will ricochet around the world with lasting socioeconomic effects for decades to come. As such, the containment and elimination of COVID-19 is vital for local, regional and global prosperity, with infection control professionals and other healthcare workers at the forefront of these efforts. To do so, we implement interventions to break the chain of infection, and draw on our collective to provide the best possible preventative care for communities and populations. While COVID-19 is new, the way in which we response to it in many ways is not.

Large-scale infectious diseases outbreaks are with us to stay. While this time, so far, some countries have escaped the severity and spread seen in Europe and North America (probably because of rapid action in closing boarders, initiating strict restrictions to movement and initiating test and trace protocols), no country can be complacent. Some measures have stood some countries in good stead: healthcare systems providing universal access to medical and hospital services; high-level national committees composed of senior public health officials that provide advice to state, territory and national health policymakers; and a responsive citizenship.

Over the coming months and years, there will be lessons learned which will require thoughtful analysis of how we can further improve the care we provide to patients and communities while also stopping community spread. Better understanding of why our infection control experts were called to implement and oversee what should have long been standard practice—most notably familiarity with person protective equipment based its systematic use, and hospital cleaning—is required. A better understanding of, and resolution to, the barriers to recognition of nurse leaders in events like these, in particular those in infection prevention and control, is also required given that outbreaks of infectious diseases are here to stay and the fundamental role that nurses play in outbreak responses now and into the future.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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REFERENCES

Ahmed, F., Ahmed, N., Pissarides, C., & Stiglitz, J. (2020). Why inequality could spread COVID-19. *Lancet Public Health*, https://doi.org/10.1016/S2468-2667(20)30085-2

Alston, P. (2020). "Responses to COVID-19 are failing people in poverty worldwide" – UN human rights expert [Press release]. Retrieved from https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=25815&LangID=E

Bai, Y., Yao, L., Wei, T., Tian, F., Jin, D. Y., Chen, L., & Wang, M. (2020). Presumed Asymptomatic Carrier Transmission of COVID-19. *JAMA*, https://doi.org/10.1001/jama.2020.2565

Cameron, E. E., Nuzzo, J. B., Bell, J. A., Nalabandian, M., O'Brien, J., League, A., … Warmbrod, L. (2019). Global Health Security Index. Retrieved from https://www.ghsindex.org/wp-content/uploads/2020/04/2019-Global-Health-Security-Index.pdf

Cavanough, E., & Tai, L.(2020). A timeline of global economic responses to COVID-19. Retrieved from https://mckellinstitute.org.au/research/articles/a-timeline-of-global-economic-responses-to-covid-19/

Center for Systems Science and Engineering. (2020). Coronavirus COVID-19 Global Cases. Retrieved from https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6

Chan, J.-W., Yuan, S., Kok, K.-H., To, K.-W., Chu, H., Yang, J., … Yuen, K.-Y. (2020). A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: A study of a family cluster. *Lancet*, *395*(10223), 514–523. https://doi.org/10.1016/S0140-6736(20)30154-9

de Wit, E., van Doremalen, N., Falzarano, D., & Munster, V. J. (2016). SARS and MERS: Recent insights into emerging coronaviruses. *Nature Reviews Microbiology*, *14*(8), 523–534. https://doi.org/10.1038/nrmicro.2016.81

Feng, S., Shen, C., Xia, N., Song, W., Fan, M., & Cowling, B. J. (2020). Rational use of face masks in the COVID-19 pandemic. *Lancet Respir Med*, https://doi.org/10.1016/S2213-2600(20)30134-X

Georgieva, K. (2020). Confronting the Crisis: Priorities for the Global Economy [Press release]. Retrieved from https://www.imf.org/en/News/Articles/2020/04/07/sp040920-SMs2020-Curtain-Raiser

Ghinai, I., McPherson, T. D., Hunter, J. C., Kirking, H. L., Christiansen, D., Joshi, K., … Uyeki, T. M. (2020). First known person-to-person transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in the USA. *Lancet*, *395*(10230), 1137–1144. https://doi.org/10.1016/S0140-6736(20)30607-3

Kakimoto, K., Kamiya, H., Yamagishi, T., Matsui, T., Suzuki, M., & Wakita, T. (2020). Initial Investigation of Transmission of COVID-19 Among Crew Members During Quarantine of a Cruise Ship - Yokohama, Japan, February 2020. *MMWR. Morbidity and Mortality Weekly Report*, *69*(11), 312–313. https://doi.org/10.15585/mmwr.mm6911e2

Kimball, A., Hatfield, K. M., Arons, M., James, A., Taylor, J., Spicer, K., … Zane, S. (2020). Asymptomatic and Presymptomatic SARS-CoV-2 Infections in Residents of a Long-Term Care Skilled Nursing Facility - King County, Washington, March 2020. *MMWR. Morbidity and Mortality Weekly Report*, *69*(13), 377–381. https://doi.org/10.15585/mmwr.mm6913e1

Lauer, S. A., Grantz, K. H., Bi, Q., Jones, F. K., Zheng, Q., Meredith, H. R., … Lessler, J. (2020). The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. *Annals of Internal Medicine*, https://doi.org/10.7326/M20-0504

Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y., … Feng, Z. (2020). Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *New England Journal of Medicine*, *382*(13), 1199–1207. https://doi.org/10.1056/NEJMoa2001316

Mahase, E. (2020). Coronavirus: Covid-19 has killed more people than SARS and MERS combined, despite lower case fatality rate. *BMJ*, *368*, m641. https://doi.org/10.1136/bmj.m641

Noppert, G. A. (2020). COVID-19 is hitting black and poor communities the hardest, underscoring fault lines in access and care for those on margins. *The Conversation*. Retrieved fromhttps://theconversation.com/covid-19-is-hitting-black-and-poor-communities-the-hardest-underscoring-fault-lines-in-access-and-care-for-those-on-margins-135615

Phan, L. T., Nguyen, T. V., Luong, Q. C., Nguyen, T. V., Nguyen, H. T., Le, H. Q., … Pham, Q. D. (2020). Importation and Human-to-Human Transmission of a Novel Coronavirus in Vietnam. *New England Journal of Medicine*, *382*(9), 872–874. https://doi.org/10.1056/NEJMc2001272

Roser, M., Ritchie, H., Ortiz-Ospina, E., & Hasell, J. (2020). Coronavirus Pandemic (COVID-19). Retrieved from https://ourworldindata.org/coronavirus

The World Health Organization (2020). "Immunity passports" in the context of COVID-19 [Press release]. Retrieved from https://www.who.int/news-room/commentaries/detail/immunity-passports-in-the-context-of-covid-19

World Health Organization (2020a). Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV) [Press release]. Retrieved from https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)

World Health Organization (2020b). WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020 [Press release]. Retrieved from https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19--11-march-2020

Yin, Y., & Wunderink, R. G. (2018). MERS, SARS and other coronaviruses as causes of pneumonia. *Respirology*, *23*(2), 130–137. https://doi.org/10.1111/resp.13196