

The novel coronavirus SARS-CoV-2 and South Africa

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At the time of writing (27 March 2020), the novel betacoronavirus SARS-CoV-2 has infected 537 808 people, in 176 countries with 24 127 deaths and a mortality of 4.5%.¹ South Africa is rapidly approaching a 1 000 confirmed cases, and has just entered 'lockdown' in an attempt to contain person to person transmission. SARS-CoV-2 belongs to the betacoronavirus family, which also includes severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV).² SARS-CoV-2 is spread by human to human droplet spread.³ The virus has a long period of survival on surfaces, and contact exposure is another major mechanism of spread. SARS-CoV-2 has also been identified for prolonged periods in faeces, exceeding 40 days in some patients.⁴ South Africa was one of the countries of highest risk of SARS-CoV-2 importation in Africa,⁵ and has now swiftly moved to community transmission. South Africa has implemented the combined intervention of quarantining infected individuals, family members, school closure and workplace distancing which mathematically is the most effective means of decreasing person to person transmission, and the reproduction number (R_0).⁶ SARS-CoV-2 has a R_0 probably between 2 and 3.⁷ The resulting infectious disease of SARS-CoV-2 is known as COVID-19. In a report from Wuhan, China, the majority of patients had mild infections (84%). Sixteen per cent of patients had severe infections, and 6.1% of all patients required ventilation.² In Lombardy, Italy, 12% of all positive cases required intensive care admission.⁸ Life-threatening complications exceeding one percent of all infected persons included severe acute respiratory syndrome, pneumonia, respiratory failure, and sepsis.² It appears that patients with a marked cytokine and 'hyperinflammation' response to SARS-CoV-2 may be at increased risk of morbidity and mortality.⁹

SARS-CoV-2 was declared a pandemic by the WHO, as it has the capacity to overwhelm healthcare systems across the globe. SARS-CoV-2 is particularly dangerous for a number of reasons, which include the following: i) with no prior exposure, people have no immunity to SARS-CoV-2; ii) the virus is easily transmitted by droplet spread, and contact with contaminated surfaces; iii) it has an exponential transmission rate with a R_0 exceeding 2; iv) it can be spread before infected people become symptomatic; and v) it has a high risk of pneumonia, acute respiratory failure, and death.¹⁰ Currently, there is no known effective prophylaxis or treatment. These factors contributed significantly to the early, high-infection rate reported in frontline healthcare workers in

China.¹⁰ Importantly, inadequate personal protection equipment (PPE), continued exposure to infected individuals, lack of training in PPE and infection prevention and control (IPC) contributed to infection in healthcare workers.¹⁰ Regions in China with limited healthcare resources have been associated with worse outcomes when compared to other regions.¹¹ With the limited number of healthcare providers, hospital beds and critical care beds in Africa, one would expect this scenario to be worse in Africa.¹² These are important lessons for healthcare providers in Africa, where the trends globally suggest that the need for hospitalisation of SARS-CoV-2 patients will exceed bed capacity, the need for ventilators will exceed capacity, and the need for N95 masks will exceed availability. There are other factors which may further aggravate transmission rates in South Africa, and adversely affect outcomes. These include living conditions of social deprivation which favour person to person spread, and the large proportion of immunosuppressed individuals with HIV infection. To this end, it is important that there is decisive action to prevent a devastating healthcare crisis in our population with the potential to collapse the healthcare system, and an unacceptable negative impact on the health of frontline healthcare providers.

It is important that frontline healthcare workers are educated and protected so that they can provide adequate care for our population, and advocate for a safe environment for both patients and healthcare workers. The response by the South African Society of Anaesthesiologists (SASA) has been phenomenal in this respect. This started at the National Congress in Pretoria where educational material was presented, and a SASA COVID-19 Working Group was formed. This has resulted in a number of resources developed for our community to ensure safe clinical practice, which are freely available on the website (<https://www.sasaweb.com/ContentDetailsOther/ContentDetailsOther?ContentId=79&SubMenuType=1>) or on the SASA app. We encourage you to familiarise yourself with these recommendations and statements, and to share them widely. Furthermore, the SASA COVID-19 Working Group has, and is, engaging at a national governmental level, and with private healthcare groups and funders, as well as philanthropic groups to ensure that the access to adequate and appropriate patient care is maximised for the population, while minimising the risk to healthcare workers. As South African frontline workers it is important that we ensure that our entire community proactively engages in these discussions wherever we are. We need to lead by example in our communities, we need to educate

ourselves about safe clinical practice, and we need to engage with hospitals and health systems management to ensure that neither the patient nor the clinician is placed at an unnecessary and unacceptable risk.

While we have made a positive initial response to SARS-CoV-2 epidemic, there are many challenges ahead, which include ensuring that the public and private healthcare systems work as a single emergency network.⁸ There are going to be tougher decisions regarding appropriate triage of patients, and appropriate allocation of scarce resources.¹³ These include the ethical decisions regarding maximising benefits, treating people equally, promoting value for benefit to others, and giving priority to the worst off.¹³ Some of the decisions that may need to be made are: i) do we save more lives, or save more life-years i.e. patients with a better prognosis; ii) how do we select between patients with a similar prognosis; iii) do we give priority to healthcare workers and study participants when all else is equal; and iv) in order to maximise benefit, do we treat the sickest or the youngest first? These are questions that we should be having with ethicists now.

There has never been a time like now for anaesthesia providers to provide global leadership in healthcare systems organisation, hospital preparedness, healthcare provider wellbeing, and appropriate and ethical care of patients.

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