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CARDIOPULSE

Response to COVID-19 in a large academic Centre in South Africa

The cohesive response to COVID-19 of the Groote Schuur Hospital in Cape Town is discussed by the Chair of Medicine at the hospital and University of Cape Town

In December 2019, a novel coronavirus strain causing an interstitial pneumonia and acute respiratory distress syndrome emerged from Wuhan, China; severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is responsible for occurrence of this disease. The World Health Organization named the clinical syndrome caused by SARS-CoV-2 the coronavirus disease 2019 (COVID-19).[1] The COVID-19 pandemic is undoubtedly the greatest public health crisis and most crucial global health calamity of our generation. As of 20 October 2020, nearly 41 million cases of SARS-CoV-2 cases have been recorded globally with over a million deaths. The number of cases and the case fatality reflect a gross underestimate as many patients with mild symptoms of COVID-19 have not received confirmatory testing and there are excess deaths in many parts of the world that have not been accounted for. In its first 9 months, SARS-CoV-2 has caused an inestimable social, psychological, biological, and economic devastation in all countries.[2] It is curious that the case load and case fatality rates are far less in African countries compared to their North American and European counterparts.[3]

South Africa has accounted for most COVID-19 cases on the African continent: >4.5 million SARS-CoV-2 PCR tests have been conducted, yielding 706 304 cases (>90% having recovered) and 18 656 deaths on 20 October 2020. The first confirmed case of COVID-19 in the country was on 5 March 2020,—a 38-year-old man who was part of a group returning from holiday in Italy. Following many more imported cases of COVID-19 and local transmission, Cape Town quickly became the national and continental epicentre for COVID-19.

Groote Schuur Hospital (GSH) is a large tertiary/quaternary academic hospital affiliated to the University of Cape Town (*Figure 1*). Having looked after >3000 patients with COVID-19 in the past 8 months, GSH is the hospital with the greatest COVID-19 experience on the African continent. The number of dedicated COVID-19 beds grew from 1 to over 280 at the peak, and the number of doctors working in the COVID-19 service increased from 5 to 114. In order to respond effectively to the multiple challenges imposed by COVID-19, GSH had to achieve a whole-of-hospital staffing model to prevent burnout and collapse of clinical care. The formation of multidisciplinary teams was central to the many successes witnessed.[4] Staff were trained early on appropriate use of personal protective equipment (PPE) and non-pharmacological interventions—including hand hygiene, disinfecting of surfaces, physical distancing, and wearing of masks in all hospital areas—were emphasized at every opportunity.

A key strategy was the formation of ward-based clinical teams that contributed members to on-call a roster while ensuring continuity of care in the wards. The on-call teams comprised six doctors from all specialties (led by physicians) working in 8-h shifts every day. The creation of multidisciplinary teams ensured adequate mix of skills and experience and the rapid and effective transfer of knowledge and skills to all doctors working on the frontline. The service comprised a stand-alone testing centre (*Figure 2*), a persons under investigation service, dedicated wards for confirmed COVID-19 cases or those who met a clinical case definition, separate wards for uninfected general medical patients, critical care, and a dedicated COVID-19 intubation team. The medical and trauma emergency units were amalgamated with separate areas for COVID-19 and non-COVID-19 cases. Patient flow into and out of the hospital and into and out of each ward was well planned. Intensive care unit (ICU) capacity had to be significantly increased: ICU beds were more than doubled and new ICU teams were created, bolstered by additional staff from other departments and a staffing plan (medical, nursing, allied, and administrative staff) based on a shift system was developed for existing and new COVID-19 beds.[4]

In addition, the newly configured service needed to provide adequate support to the primary and secondary level referral clinics and hospitals, who were also under enormous pressure. A paperless, electronic patient record had to be created to minimize risk of infection to staff. The relationship between medical team leaders and hospital management was strengthened, with regular combined meetings. The enhanced collaboration enabled the exponential rise in PPE expenditure to ensure staff safety at all times, and massive increases in spending on oxygen, a key therapy for COVID-19.[5]

As Cape Town was the initial epicentre for COVID-19 on the continent, GSH was constantly developing and refining protocols and algorithms for the clinical management of COVID-19, based on available and rapidly evolving evidence. These have subsequently been shared widely and adopted by many other hospitals in the country and continent.[4] Many members of our department served on provincial and national committees and contributed to development of policy documents and guidelines.

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Figure 1 Entrance to Groote Schuur Hospital.

Figure 2 The Groote Schuur Hospital Testing Centre.

A key contribution to work of the GSH testing centre, call centres for informing patients about test results and patient contact tracing was from undergraduate medical students and research postgraduate students who took up the opportunity to volunteer and support the clinical teams through key administrative functions.[6,7]

Innovative scholarship on COVID-19 has been an important part of the hospital response during this period. Many have investigated the epidemiology, outcomes, and therapeutic strategies.[8] In addition, members of our department are leading many clinical trials and are part of multi-centre projects on vaccines, surveillance, seroprevalence, and biorepository studies. Guidance has been published to aid researchers on appropriate approaches to informed consent during the time of COVID-19.[9] A whole issue of the *South African Heart Journal* led by members of our department has recently been published.

The experiences described above allowed GSH to respond appropriately to the initial COVID-19 surge in South Africa, and to build a

template for encountering a phase of chronic endemicity as well as any future surges that may occur. Leading clinical services during the time of COVID-19 has provided several important lessons: (i) the challenge of leading in complexity which needs a balance between agility of response and maintaining stability; (ii) developing new communities of practice predicated on common value; (iii) the importance of flattening of hierarchies in responding to a crisis and building cohesion within multidisciplinary teams; and (iv) the value of a clear strategy for effective communication.

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