Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Testing COVID-19 therapies to prevent progression of mild disease

A randomised controlled trial¹ found no significant benefit of lopinavir-ritonavir over placebo in patients with severe coronavirus disease 2019 (COVID-19). Even though lopinavir-ritonavir might not be efficacious in cases of severe COVID-19, we postulate that similar treatments to these antivirals, which also effectively inhibit viral replication, will be more effective in preventing disease progression if used to treat mild disease than if used to treat severe disease. We encourage randomised trials to assess antiviral drugs for the treatment of mild COVID-19.

Similar to influenza, we propose that antiviral drugs for severe acute respiratory syndrome coronavirus 2 are probably most effective if administered soon after symptom onset, when viral replication is likely to be an important driver of pathogenesis. For example, oseltamivir has shown benefits over placebo in patients with influenza if administered less than 48 h after the onset of symptoms. By contrast, administration of this influenza neuraminidase inhibitor more than 48 h after symptom onset showed no significant benefit over placebo. Likewise, baloxavir, which targets the cap-dependent endonuclease, was more effective when given to patients with influenza within 24 h of symptom onset than when given to patients after 24 h of symptom onset.²

For COVID-19, viral load appears to be maximal near the time of symptom onset,³ providing a rationale for the probable importance of early control of viral replication. Moreover, an analysis of COVID-19 symptom progression indicated that hospitalisation occurs a mean of 5 days after symptom onset, and deterioration to a severe status might occur more than 5 days after

symptom onset. Therefore, there is a potential treatment window in which intervention could prevent the progression of disease. Conversely, critically ill patients can show signs of an exuberant inflammatory response,⁴ which might not depend on viral replication once initiated. Since severe manifestations of COVID-19, such as acute respiratory distress syndrome, often manifest many days after symptom onset, treatments that are highly effective in controlling viral replication could nonetheless show modest or no benefits in treating severe disease.

Although treatments for severe illness are desperately needed, we should not lose sight of the benefits of early treatments for mild infection that could prevent serious complications. Such an indication, if proven, could reduce requirements for admission to hospital and intensive care units and provide benefit to a large number of people, especially in resource-limited settings, where hospital capacity is already limited and might therefore be unavailable to patients with severe illness. One modelling study⁵ suggested that a therapy that reduces progression to critical disease could reduce the need for physical distancing and hasten the development of herd immunity, thereby achieving the same benefits as increased intensive care unit capacity, while preventing more critical cases.

Assessing the prevention of mild disease progression after the initiation of antiviral therapy is a valuable endpoint for clinical trials, but has not been the focus of most studies. The WHO Solidarity trials enrol hospitalised patients, many of whom will have been infected for some time. At the time of writing, we are aware of only one trial focused on mild illness (ClinicalTrials.gov, NCT04307693). We propose that obtaining evidence from randomised controlled trials for the treatment of mild COVID-19 should become an imperative for ongoing research.

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COVID-19 in Cameroon: a crucial equation to resolve

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On March 6, 2020, the first case of coronavirus disease 2019 (COVID-19) was officially reported in Cameroon.¹ As of April 25, 2020, the number of cases had increased to 1569, with 53 deaths,² indicating an exponential growth in the number of cases. Although these numbers already sound shocking, the truth is that they are an underestimation because the diagnostic system for COVID-19 in Cameroon is not robust. Realistic projections in this context suggest approximately 14 000 cases of COVID-19 in the country.

For more on the WHO solidarity trials see <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov/solidarity-clinical-trial-for-covid-19-treatments>

For more on the COVID-19 symptom progression analysis see <http://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/covid-19/report-8-symptom-progression-covid-19>

A series of infection control measures have been implemented by the Government of Cameroon, including hygienic measures (eg, systematic hand washing), physical distancing, closure of all educational facilities and international borders, interministerial consultations that included the input of development partners, and financial measures allocated to implement this response. The university research community and national media outlets helped to develop and implement these measures alongside medical practitioners.³

Despite this mobilisation, the progression of the pandemic indicates the weaknesses of some of the selected approaches. For instance, in early March, the first cases were reported only in the Centre Region of Cameroon, and 10 days later a small number of cases were identified in the Littoral and West Regions.⁴ This was the time to seal off these three regions, which are the most economically active and populated parts of our nation, but no restrictions on movement were introduced. Of note, the general state of hospital infrastructure in Cameroon is similar to that of many other African countries—that is, far from the standards required internationally. Moreover, although Cameroon has many highly qualified professionals in the fields of medicine and social science, regrettably, these experts were not always consulted on meeting the challenges of the unfolding pandemic. Finally, society-wide acceptance of prescribed rules and regulations must be achieved if public health measures are to be effective, and this was not the case in this instance. Many Cameroonians are slow to acknowledge the potential danger of the pandemic.

Improving the response to COVID-19 in both Cameroon and the rest of the continent is crucial. In view of the projected number of cases, which differs so greatly from the officially known figures, a total

confinement of the entire population seems inevitable. Public support for the confinement process will be imperative, and could be encouraged by conveying the message that the stronger the adherence to complete confinement, the shorter the period of that confinement and the sooner people can return to normal life. Given the economic precarity of most households in Cameroon, including vulnerable groups such as people with HIV infection, an allocation of special financial allowances to households could encourage compliance with confinement measures.⁵ Similarly, financial support should be provided to the medical personnel at the forefront of this fight and business owners for whom operations will be restricted throughout a period of confinement. Contact tracing, wearing of masks in public places, and self-isolation of individuals who have symptoms are crucial. Finally, the use of scientific developments (including newly developed rapid diagnostic tests and treatment options) and allocation of more resources to the fight against COVID-19 would lead to a greater capacity for the diagnosis, rapid isolation, treatment, and care of infected individuals. These actions will help save millions of lives and make it possible to restart the economy as quickly as possible. This is the time to show solidarity, compassion, and leadership.

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COVID-19 on the African continent

As of April 20, 2020, 14 068 people have been infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in Africa, of whom 3158 (22.4%) are in South Africa.¹ The transmissibility of SARS-CoV-2, combined with the scarcity of crucial health equipment and the challenges of implementing widespread physical distancing and case isolation, poses a grave threat to the continent.

To illustrate the potential burden of SARS-CoV-2 epidemics within the most vulnerable countries in Africa, we simulated a SARS-CoV-2 outbreak in DR Congo in the absence of interventions. Using an age-structured epidemiological model (appendix p 1), and assuming a basic reproductive number of 2.72 (95% CI 2.56–2.87),² we estimate that there would be 76 213 155 infections (95% CI 74 156 965–77 800 029) and 319 441 deaths (313 079–324 175) in the absence of physical distancing (figure). Although individuals younger than 20 years account for 42 752 770 (95% CI 41 551 696–43 683 014; 56.1%) of these simulated SARS-CoV-2

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See Online for appendix