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The COVID-19 response in the United Arab Emirates: challenges and opportunities

Like other countries in the region, the United Arab Emirates (UAE) was deeply affected by the pandemic. However, its foresight and proactive policies helped to create opportunities out of the challenges and spurred the development of trilateral collaborations involving government, academia and industry.

The UAE is a young country located in the Arabian Peninsula and was the first in the region to report SARS-CoV-2 cases. The UAE government's response to the pandemic was swift and decisive. **Effective public health measures** were immediately implemented, beginning with activating an emergency response system, issuing guidance for risk communication with the public, building field hospitals and providing rapid drive-through PCR testing. The number of PCR tests conducted reached **more than double** the population in January 2021. The UAE has also been known for its efforts to support countries in need of major medical aid on a global level. For example, the Abu Dhabi Medical Devices Company, in collaboration with international entities, is providing **more than 500 million syringes and needles** for the COVID-19 vaccines, which is equivalent to 25% of UNICEF and COVAX's global need for 2021. Additionally, the Abu Dhabi HOPE Consortium initiative brings together leading public-private industry partners, including the Department of Health - Abu Dhabi, Etihad Cargo, Abu Dhabi Ports Group, Rafed and SkyCell to facilitate the delivery of 18 billion vaccine doses around the world by the end of 2021. The HOPE Consortium has recently developed the largest "**freezer farm**" in the UAE, with a static capacity to hold 11.4 million vaccine doses at an ultra-cold temperature of -80°C .

From an academic viewpoint, the pandemic focused the attention of decision makers on the importance of the immune system in the fight against SARS-CoV-2. This pushed the interest in vaccine-related clinical research to new heights. The UAE was one of the first countries to support and actively participate in clinical trials aimed at evaluating the efficacy and immunogenicity of various vaccines. Remarkably, clinical trials were launched in the UAE for the first time in its history, including the

4 Humanity phase 3 trial with the inactivated SARS-CoV-2 vaccine in July 2020 and the **Sputnik V-UAE phase 3 trial** in January 2021. This challenge provided a golden opportunity for scientists to conduct high-quality research that spanned many fields, including epidemiology, diagnostics and therapeutics.

In March 2020, the three main health authorities in the UAE (the federal Ministry of Health and Prevention; the Department of Health - Abu Dhabi, with its newly established Public Health Center (ADPHC); and Dubai Health Authority) launched a national COVID-19 research committee, aiming to enable research collaboration between health care professionals, academics and pharmaceutical companies and to expedite COVID-19 research and translate it into policy and a public health response. This newly formed committee has 26 members and 3 subcommittees in the fields of epidemiology, diagnostics and therapeutics. A national Institutional Review Board (IRB) for COVID-19 research was also established, which was instrumental in expediting an efficient IRB approval process, particularly for multicenter research projects. A **registry** was also developed to provide the IRB status of all COVID-19 research at the national level, aiming to consolidate the efforts, avoid unnecessary duplications and identify priority research gaps that are important to guide policies and the response efforts. While the registry was presenting the IRB status of only local research activities, the ADPHC scientific report was capturing published and unpublished UAE research activity in addition to other international breakthrough articles on a daily basis from February 2020 until November 2020. The **report** developed into a valuable resource that presented research activities and breakthroughs in COVID-19-related research to the UAE scientific and medical communities.

The investment in national COVID-19 research collaborations has resulted in several important studies. To highlight a few, the first and largest population-based cross-sectional seroprevalence study in the UAE was conducted in July 2020 with more than 13,000 participants. The **study** revealed a low seroprevalence among residents of households in the Emirate of Abu Dhabi and substantially higher seroprevalence in labor camps, reflecting the high efficiency with which SARS-CoV-2 spreads in crowded work settings. Furthermore, genomic surveillance and phylogenetic analysis studies revealed **multiple introductions** of SARS-CoV-2 into UAE, which were closely monitored. Another **study** utilized the detection and quantification of SARS-CoV-2 RNA in wastewater and treated effluents to monitor and track the extent of viral spread at the community level. The **findings** of the double-blind phase 3 multicenter clinical trial assessing the efficacy of inactivated SARS-CoV-2 vaccine demonstrated its safety profile and its ability to reduce the risk of symptomatic COVID-19. Additionally, the results of the Sputnik V-UAE phase 3 trial are expected to be published soon. The pandemic has provided a critical impetus for clinical research, and the benefits of this research are beginning to be realized. The investment in these high-impact projects should now be harnessed to strengthen translational and clinical research initiatives at the national and global levels. □

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Published online: 27 July 2021

<https://doi.org/10.1038/s41590-021-01000-5>

Acknowledgements

The authors wish to acknowledge the contribution of S. Al Memari and colleagues at Abu Dhabi Public Health Center for their leadership role in facilitating the national

COVID-19 research committee, and N. Al Kaabi (Sheikh Khalifa Medical City) and A. Al Hammadi (Tawam Hospital and College of Medicine & Health Sciences, UAE University) for leading the vaccine clinical trials in the UAE.

Competing interests

The authors declare no competing interests.