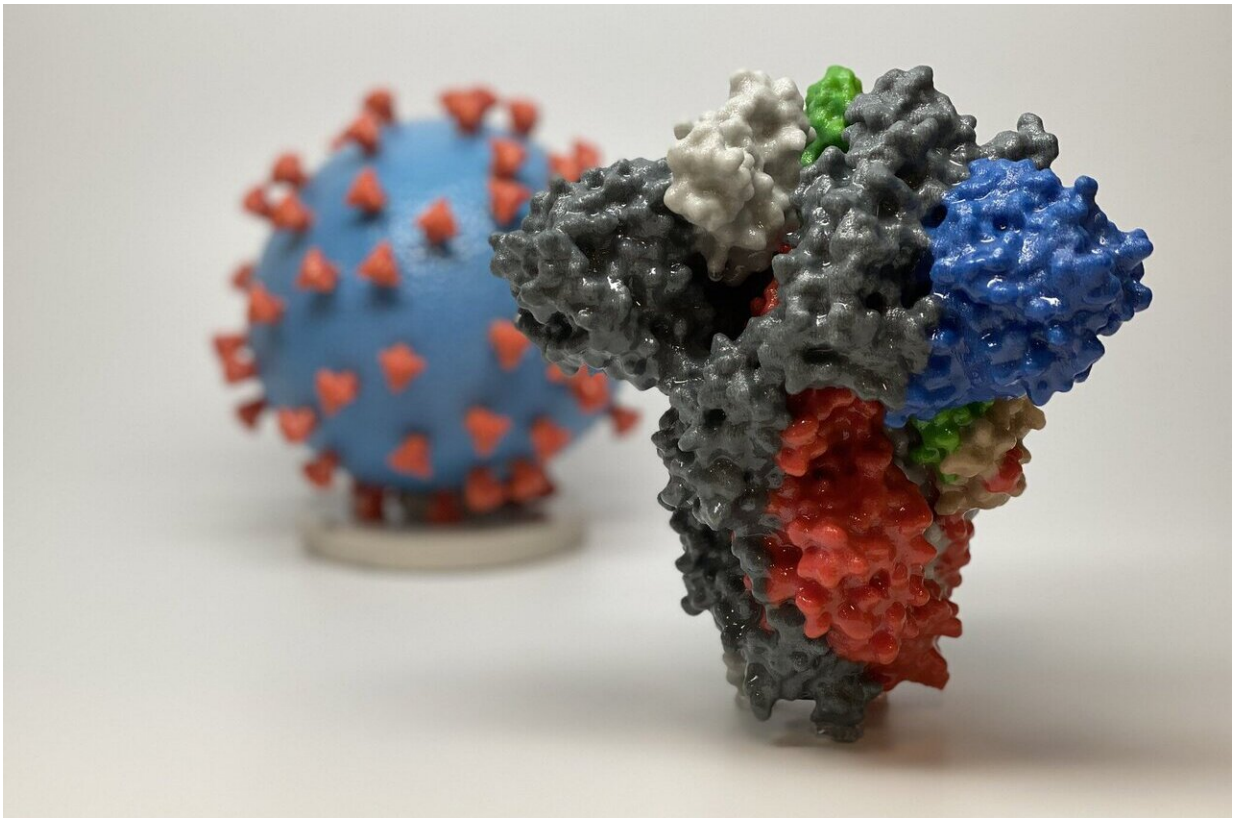
Cancer care model could help us cope with COVID-19, says nanomedicine expert

April 27 2020



3D print of a spike protein of SARS-CoV-2, the virus that causes COVID-19—in front of a 3D print of a SARS-CoV-2 virus particle. The spike protein (foreground) enables the virus to enter and infect human cells. On the virus model, the virus surface (blue) is covered with spike proteins (red) that enable the virus to enter and infect human cells. Credit: NIH

As the UK government looks for an exit strategy to Britain's COVID-19 lockdown a nanomedicine expert from The University of Manchester believes a care model usually applied to cancer patients could provide a constructive way forward.

Kostas Kostarelos, is Professor of Nanomedicine at The University of Manchester and is leading the Nanomedicine Lab, which is part of the National Graphene Institute and the Manchester Cancer Research Centre.

The Manchester-based expert believes more scientific research should be employed as we transform how we view the COVID-19 pandemic, or any future virus outbreak, and deal with it more like a chronic disease—an ever present issue for humanity that needs systematic management if we are ever to return to our 'normal' lives.

Professor Kostarelos makes this claim in an academic thesis entitled 'Nanoscale nights of COVID-19' that offers a nanoscience response to the COVID-19 crisis and will be published on Monday, April 27, by the journal *Nature Nanotechnology*.

"As for any other chronic medical condition, COVID-19 stricken societies have families, jobs, businesses and other commitments. Therefore, our aim is to cure COVID-19 if possible," says Professor Kostarelos.

"However, if no immediate cure is available, such as effective vaccination," Professor Kostarelos suggests: "We need to manage the symptoms to improve the quality of patients' lives by making sure our society can function as near as normal and simultaneously guarantee targeted protection of the ill and most vulnerable."

Professor Kostarelos says his experience in cancer research and

nanotechnology suggests a model that could also be applied to a viral pandemic like COVID-19.

"There are three key principles in managing an individual cancer patient: early detection, monitoring and targeting," explains Professor Kostarelos. "These principles, if exercised simultaneously, could provide us with a way forward in the management of COVID-19 and the future pandemics.

"Early detection has improved the prognosis of many cancer patients. Similarly, early detection of individuals and groups, who are infected with COVID-19, could substantially accelerate the ability to manage and treat patients.

"All chronic conditions, such as cancer, are further managed by regular monitoring. Therefore, monitoring should be undertaken not only for patients already infected with COVID-19, to track progression and responses, but also for healthy essential workers to ensure that they remain healthy and to reduce the risk of further spreading.

Finally, says Professor Kostarelos, nanomaterials—as well as other biologicals, such as monoclonal antibodies—are often used for targeting therapeutic agents that will be most effective only against cancer cells.

The same principle of 'targeting' should be applied for the management of COVID-19 patients to be able to safely isolate them and ensure they receive prompt treatment.

Also, a safeguarding strategy should be provided to the most vulnerable segments of the population by, for example, extending social distancing protocols in elderly care homes—but with the provision of emotional and practical support to ensure the wellbeing of this group is fully supported.

"Protection of the most vulnerable and essential workers, must be guaranteed, with protective gear and monitoring continuously provided," he added. "Only if all three principles are applied can the rest of society begin to return to normal function and better support the activities in managing this and all future pandemics."

Provided by University of Manchester