

The Impact of COVID-19 Pandemic on Medical Research

Dear Editor,

Scientists in medical research have made remarkable progress in COVID-19-related virology, clinical medicine, epidemiology, pharmacology and vaccines. As of 6 October 2020, over 93,000 scientific publications reported the progress in these fields.¹ These medical research studies contributed to understanding COVID-19 and identifying the cure and prevention of the disease.

Meanwhile, most of the projects in medical research not related to COVID-19 have halted to obey social distancing and travel restriction policies. Furthermore, the pandemic is causing unprecedented shortage in laboratory resources, including workforce, equipment, facility and reagents. This may profoundly affect the long-term development of certain research areas due to the continuing global pandemic and the risk of a second wave. The situation is compounded by the characteristics of most medical research, which relies on continuous, intensive and collaborative laboratory operation. Months of discontinued work have delayed the progress of projects and development of postgraduate students and investigators. We analysed these constraints and impediments during the COVID-19 pandemic, and propose strategies to overcome them.

Laboratories have shut down or are maintained by minimal staff since the COVID-19 outbreak,² and lack of manpower and facilities has halted most experiments. Centres for laboratory animals have had to decrease the size of their animal colonies,³ and the shortage of experimental animals could have a long-lasting impact on the progress of scientific projects as it takes months to rebuild these colonies. Travel restrictions and border closures disrupt the global supply chain of equipment and lab supplies,⁴ and hamper projects that require travelling.

These constraints during the COVID-19 pandemic may significantly disrupt medical research, personal development of researchers, journals and conferences, and strategic planning of the national scientific landscape.

While COVID-19 is attracting billions of dollars in grants in China and the US, governments face an enormous economic burden in coping with the

pandemic. Hence the grant application in other fields of medical research may be increasingly competitive.

It is challenging to groom postgraduate students during campus closure and imposition of social distancing, especially when their progress relies on laboratory work. The career development of researchers may be impacted by the delayed progress of the projects, challenges in obtaining grants, and the decrease in new faculty positions.⁵

Leading journals have postponed deadlines of manuscript revisions.⁶ The preparation of a manuscript is prolonged during the pandemic, as physician-scientists combating COVID-19 are less available. There are concerns that new submissions may continuously decrease under the impact of COVID-19 pandemic.

At the same time, symposia in biomedical sciences planned for this year are mostly postponed⁷ or cancelled,⁸ while others change to virtual meetings.⁹

To overcome the constraints imposed on medical research by COVID-19, we propose the following strategies that may require adjustment and collaboration between individuals, research groups and the government.

The well-being of staff must be uppermost because human resource is the most valuable asset for research facilities. To prevent or delay the second wave of COVID-19, laboratories and universities should follow the recommendations of the World Health Organization and take progressive actions, including guaranteeing the personal protection of everyone in their facilities, and encouraging them to actively report on their health.¹⁰ In addition, employers and group leaders should emphasise work efficiency by optimising scheduling and promoting teamwork to overcome the lack of manpower.

Investigators and group leaders should carefully evaluate each project, prioritising the most scientifically significant ones, and adjusting individual and group schedules to ensure best outcomes. Most importantly, the government should realise the challenges faced by medical research and consistently support its development. These efforts may include optimising the use of grant money and encouraging investment

from industries. Flexibility in the evaluation of grant renewal or termination, while guaranteeing scientific progress may also be necessary.

Collaboration and sharing of assets is essential for the development of research teams in medical research due to the shortage of time and resources. The existing isolated/silo model of lab-running should be changed to establish closer collaboration among peers. We could consolidate resources in universities, research institutes, industrial laboratories and government departments to maximise utilisation. Such partnerships can optimise the value of assets, promote knowledge exchanges between groups, and raise the opportunity for high-quality, collaborative inter-disciplinary work.

Information technology enables efficient communication via e-lab meeting or e-symposium.¹¹ Innovations such as wearable devices and smart phones could help record patient data in clinical trials to aid research.

The COVID-19 pandemic is undoubtedly disrupting global research work in medicine. The shortage of research resources and other challenges requires investigators, scientific communities and governments to make sustained efforts to ensure the continuous development of medical research.

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