


Impact, Strategies, and Opportunities for Early and Midcareer Cardiovascular Researchers During the COVID-19 Pandemic

When written in Chinese, the word “crisis” is composed of two characters. One represents danger and the other represents opportunity.

—John F. Kennedy

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The coronavirus 2019 (COVID-19) pandemic, resulting in the shutdown of laboratory and clinical cardiovascular research and postponement or cancellation of many scientific conferences, will likely have a substantial effect on the career progression of researchers on a global scale. Early and midcareer researchers (EMCRs) are particularly vulnerable, given the disruption in establishing research independence, developing their team, building their reputation within the scientific community, and attracting research funding, which can be challenging for EMCRs, who historically have lower funding success rates compared with more senior researchers.¹ Women may be particularly disadvantaged, especially those with primary caregiver responsibilities. We outline the foreseeable impact of COVID-19 on EMCRCR career progression, provide solutions to minimize the impact, and highlight some opportunities that may arise after the pandemic.

IMPACT OF COVID-19 ON CARDIOVASCULAR RESEARCHERS

Some of the main effects of COVID-19 that are likely to occur in coming years include reduced opportunities for training and peer learning; data collection in the laboratory or clinic, which will delay publication of original research; networking; presentations at conferences and invited talks; award granting; and team recruitment and development. These may limit the ability of cardiovascular EMCRCRs to receive peer recognition, limiting future awards of research funding, fellowships, and career progression. Considering the global economic effect of COVID-19 and government strategies to avoid recession, there may be reductions in cardiovascular research funding and availability of ongoing positions in both academia and industry, reducing the cardiovascular workforce. The prevalence of anxiety, depression, and posttraumatic stress disorder will likely increase across all groups of cardiovascular researchers,² particularly those who are also healthcare providers, such as cardiologists and nurses. There is an urgent need for unified action to help minimize the impact of COVID-19 on the cardiovascular research sector (Figure).

STRATEGIC SOLUTIONS TO MINIMIZE THE IMPACT OF COVID-19 ON CAREER PROGRESSION

Strong leadership with clear communication and expectations, but with flexible arrangements, at all levels will be fundamental to support EMCRCRs.

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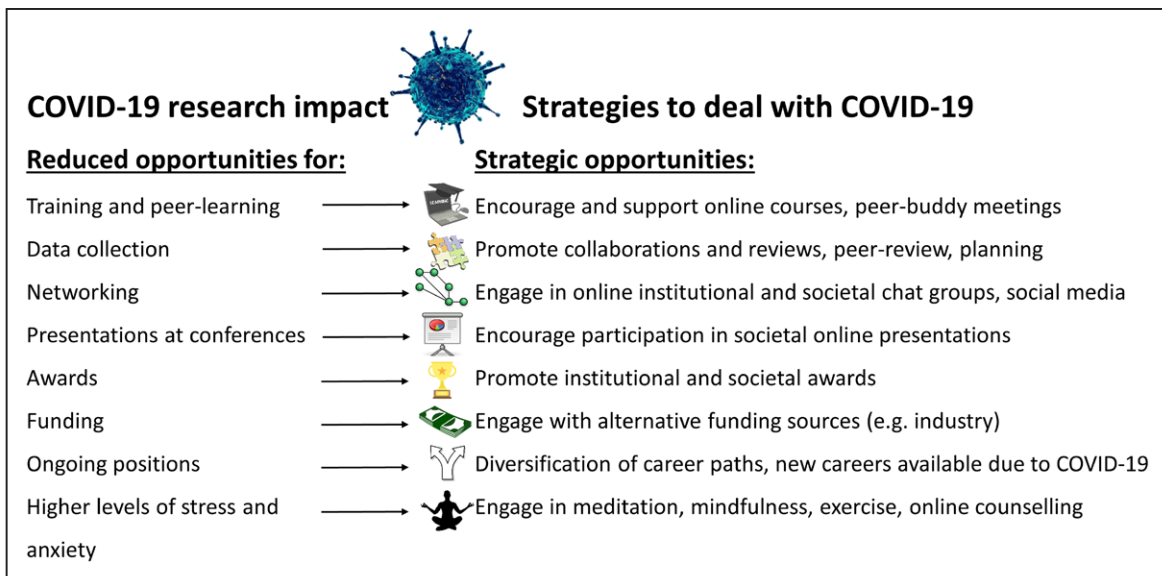


Figure. Research impact and strategies early and midcareer cardiovascular researchers can use to succeed during the coronavirus 2019 (COVID-19) pandemic.

Institutions and societies or councils could consider holding annual scientific meetings or seminar series online throughout the year, so that EMCRs will have the opportunity to present their work, give invited talks, and win awards. These groups can also take advantage of social media to help EMCRs by developing chat groups (eg, the High Blood Pressure Research Council of Australia), journal clubs (eg, *Hypertension* and the Nephrology Journal Club on Twitter), and closed Facebook groups. Societies and councils could provide research boards where EMCRs can post information about their needs, and those with matching skills and data can get in touch to start new collaborations, which would increase productivity for both parties and minimize loss of time.

Supervisors and managers could encourage and support online learning by recommending a number of free online tutorials and courses available for EMCRs to learn new and useful skills, such as computational biology. This also provides an opportunity to develop strong communication skills, including those necessary for science outreach. A peer buddy system within or across teams and institutions could be used to increase peer learning and promote new collaborations. Supervisors may also encourage EMCRs to get in touch with their mentors, and if no mentor is available, help the EMCR find one. This is also an opportune time to sponsor bright cardiovascular researchers outside of our own teams by inviting external EMCRs to give talks at laboratory meetings.

Although performing experiments and collecting data may not be possible, alternative ways for EMCRs to be productive and maintain momentum include analyzing existing data or writing review papers, meta-analyses, and systematic reviews. Becoming familiar

with biobanks (eg, UK Biobank) and data repositories (eg, National Center for Biotechnology Information Gene Expression Omnibus) would be useful. The development of new macros and machine learning tools for cardio-renal histology, for example, would speed up imaging analysis and remove bias. Making these tools open access would benefit many researchers. EMCRs could also participate in peer review and plan data collection for when non-COVID-19-related research is able to proceed. EMCRs involved in clinical trials can complete ethics applications or plan for recruitment of participants; laboratory-based researchers can prepare new protocols, present ideas to the team, and order reagents. Following a routine or using a calendar to plan each day may help with maintaining productivity. EMCRs can explore alternative funding sources (eg, industry) while traditional funding avenues have reduced access. Diversification of career paths may also be available after COVID-19. Maintaining good physical and mental health will enable EMCRs to continue to work productively and reduce the impact of COVID-19 on their careers and health. Engaging in regular exercise, meditation, and mindfulness or seeking online counselling will help EMCRs stay healthy.

POTENTIAL OPPORTUNITIES AFTER THE COVID-19 PANDEMIC

Although the COVID-19 pandemic will likely have a substantial effect on the careers of many EMCRs, there are a number of potential opportunities that may arise and influence work in the future. Activities that previously involved travel, such as workshops and conferences, could be presented virtually. Although not a substitute

for peer networking, opportunities for online conferences or training schools may arise, which would allow EMCRs from low-income countries and those with caregiver responsibilities to participate, improving diversity. The use of now widely accepted telehealth approaches to interview participants may increase the outreach of research, allowing for intervention studies to be carried out in rural and remote communities at lower costs. Similar approaches could be used to promote cardiovascular health in classrooms, where scientists can interact with, inspire, and educate the next generation. For discovery research, COVID-19 infection is an example of why we need to value “blue sky” research to understand mechanisms and find new therapies, move towards integration of systems and communication between tissues instead of a single-gene approach, and integrate the old (eg, renin-angiotensin system) with the new (COVID-19). Given the possible divergence of traditional government research funding into other avenues to support health-care and the global economy, research funding from alternative sources will be crucial to support EMCRs after the COVID-19 pandemic. While some countries already have strong crosstalk between industry and academia, this may be an opportunity for other countries (such as Australia) to foster such a relationship to prop up the cardiovascular research workforce. An overall change in the culture of cardiovascular research, with clear paths forward for translation, innovation, and collaboration, as outlined in the American Heart Association’s call to action³ and by the Australian Cardiovascular Alliance,⁴ is warranted. EMCRs can be the drivers for this transformation by building a culture based on collaboration and inclusivity within and across teams.

In times of uncertainty, there is one certainty: Cardiovascular researchers can continue to engage,

collaborate, innovate, and find solutions for some of the most complex medical problems of our times. The threat to career progression is only half of the crisis; there is also opportunity. A unified, collaborative sector will continue to succeed.

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