

Have a heart during the COVID-19 crisis: Making the case for cardiac rehabilitation in the face of an ongoing pandemic

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“Please don’t postpone my cardiac rehabilitation class,” pleaded the concerned patient with recently diagnosed coronary artery disease in an email sent to hospital management. This plea highlights how some routine clinical services, including centre-based cardiac rehabilitation (CR), take a back seat during times of crisis such as the current COVID-19 outbreak.

COVID-19 in Singapore

As the world scrambles to contain the COVID-19 outbreak, healthcare systems in seriously affected cities are facing tremendous strain to accommodate the escalating number of sick and dying. As of 26th March 2020, the densely packed city-state of Singapore (population 5.8 million) is one of the first few countries to be affected outside of China, with 683 confirmed COVID-19 cases. Drawing lessons from the devastating severe acute respiratory syndrome (SARS) epidemic in 2003, Singapore has been strengthening its defence and utilising a multi-pronged approach to fight against COVID-19.¹ Extraordinary measures are being taken to alleviate potential bed crunch and manpower shortage in public hospitals, in preparation to receive a surge of COVID-19 cases. Hospitals have postponed non-critical outpatient visits, clinical services and elective surgeries. In order to minimise operational risks, all healthcare institutions have set up alternate teams of working staff that are physically segregated and deployed to work different schedules.

The bigger global threat

While such assertive measures to tackle the contagion are necessary, there are ramifications on other aspects of healthcare – specifically, the delivery of cardiovascular (CV) rehabilitation is hampered. The global magnitude of CV disease is staggering – according to the World Health Organisation, CV disease claims 17.9

million deaths annually. This easily dwarfs the current COVID-19 death toll of over 21000 across 198 affected countries. Nonetheless, the rampant and unpredictable nature of this pandemic draws away valuable resources and personnel from usual clinical services. Centre-based CR, often regarded as a non-essential clinical service in the hierarchy of CV treatment modalities, inevitably gets undermined.

CR: under-utilised and under-appreciated

Despite being one of the oldest forms of treatment for CV disease, CR services are available in only 54.7% of countries globally, and utilisation remains poor worldwide. In Singapore, more than 85% of eligible patients (over 14,000 per annum) do not participate in CR programs,² even before the COVID-19 crisis. Not only do the majority of patients shun CR, some healthcare providers remain sceptical of its efficacy, leading to further reduced referral rates and overall dismal uptake.³ Poorer outcomes are seen in patients not enrolled in CR, with higher hospital readmission rates and up to 64% increased mortality compared to CR participants.⁴ The following paragraphs elaborate how the ongoing outbreak has amplified traditional barriers to CR, and shed light on how alternative CR delivery methods may take centre stage.

COVID-19 versus CR

CR programs in Singapore involve close interaction between patients and multidisciplinary healthcare

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Table 1. Cardiac rehabilitation (CR) delivery during the COVID-19 crisis and beyond.

Proposed CR delivery methods	Barriers addressed
Initiate remote or off-site rehabilitation (e.g. home-based CR)	1) Suspension of centre-based exercise classes 2) No time to attend centre-based classes
Empower patients to self-access information via:	
✓ social media	1) Lack of in-person counselling
✓ verified resources/websites	2) Poor patient awareness/low health literacy
✓ messaging applications	3) Healthcare workers redeployed to deal with COVID-19
✓ online videos of educational talks	
✓ real-time video-conferencing	
Remote exercise prescription via:	
✓ telephone follow-ups	1) Reduced physical activity
✓ smartphone application	2) Fear of leaving home
✓ wearable activity tracker usage	3) Unmotivated to exercise
Digitisation of patient support groups via:	
✓ chat group involvement	1) Poor psychosocial support
✓ use of tele/video-conferencing	
Publish guidelines/recommendations on telehealth/home-based CR	1) Lack of clinical guidelines and funding for alternative CR modalities
Resource projection and cost-effectiveness studies to be carried out	1) Cost-effectiveness of new methods unknown

teams during one-on-one or group consults, exercise, education and counselling sessions. The in-person interaction between patients and healthcare workers (HCWs) improves utilisation of CR, but qualifies as “close contact” (defined by the Centres for Disease Control and Prevention as within six feet of one another) and unfortunately increases risk of COVID-19 transmission. Despite the well-established mortality and morbidity reduction benefits of CR,⁵ concerns over community transmission have tipped the scales towards suspension of exercise classes and in-person sessions. Before the COVID-19 outbreak in Singapore, hospitalised patients who were eligible for CR could participate in outpatient exercise classes within two weeks of discharge, but these classes are now adjourned by up to six months. Regrettably, these delays are likely to result in suboptimal patient outcomes.

When survival instincts take over

In cities stricken by the COVID-19 outbreak, the importance of secondary prevention of CV disease has been overlooked amidst feelings of uncertainty and panic. Thousands are quarantined – some mandated by health authorities and others self-imposed. Growing fear over community spread of COVID-19 has triggered many to isolate themselves in their own homes out of safety or social responsibility. Working from home has become the norm for most. If the pandemic runs a protracted course, these prolonged periods of reduction in physical activity will negatively impact CV health, more

so in those with established CV disease. The detrimental consequences are further exacerbated in patients who postpone their cardiology clinic appointments and choose not to refill their prescriptions.

Looking for a silver lining ahead

Although the COVID-19 crisis has disrupted conventional CR programs, it also presents an opportunity to address CV health through remote and innovative means. We should make the call for patients with CV disease to be extra vigilant in their efforts to avoid contact with the virus and emphasise CV risk factor control with equal priority. Should these patients contract COVID-19, they are at risk of destabilisation from the combined stressors of systemic infection and inflammation. Early studies have shown that those with chronic medical conditions, such as hypertension, diabetes and CV disease, suffer from increased morbidity and mortality when affected by COVID-19.^{6,7} The fatality rate with COVID-19 is elevated up to fivefold in those with CV disease.⁸ This information allows HCWs to rally patients with CV disease to take as much responsibility for their CV health and risk factor control, as they would in protecting themselves against spread of COVID-19.

An impetus for CR delivery via mobile health and social media

During this ongoing pandemic, people are turning to their mobile devices more than ever, scrutinising social

media, news websites and messaging applications in search of the latest updates on COVID-19. These mobile health platforms – including web-based resources, smartphone applications and videoconferencing – provide a fertile ground for disseminating important and accurate health information (see Table 1), to ensure that patients keep themselves healthy during the pandemic and do not trivialise their risks of CV disease.⁹ At present, with the uncertain trajectory of the COVID-19 outbreak, patient monitoring and engagement is important for an effective outreach to promote secondary prevention of CV disease. With bespoke smartphone applications and wearable activity trackers, exercise can even be prescribed remotely and performed any time in selected patients suitable for home-based CR (HBCR).¹⁰ An additional benefit of technology-enhanced HBCR is its potential for economic savings for healthcare systems. This consideration is certainly timely given the severe economic repercussions of COVID-19 in affected countries. The COVID-19 pandemic is an opportune time to show that patient-, physician- and system-related barriers to CR can be overcome by the large-scale deployment of digital health, with guidance already in place for implementation.^{11,12}

Conclusion

Progress and change are often made in times of crisis. The handling of current or even future pandemic should not affect the continuity of care and secondary preventive measures for patients with CV disease. Even with the rapidly rising number of COVID-19 cases across the globe, the leading cause of morbidity and mortality worldwide remains CV disease. There is no better time than now for all CR providers to explore and implement methods to improve or supplement existing programs. Utilising technology for CR delivery can provide the much-needed boost to CR programs during and beyond the COVID-19 outbreak. It is time to future-proof CR – one of the oldest and most established treatment modalities of CV disease.

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