

Letter to the Editor on the “Core Components of Cardiac Rehabilitation Programs: 2024 Update: A Scientific Statement From the American Heart Association and the American Association of Cardiovascular and Pulmonary Rehabilitation”

Rui Pedro Albuquerque^{1,2}, Hélder Dores^{1,3,4,5}, Manuel Gonçalves-Pereira^{1,4}

¹ Faculdade de Ciências Médicas | NOVA Medical School, Universidade NOVA de Lisboa, Lisbon, Portugal

² Department of Psychiatry, Hospital de Egas Moniz, Unidade Local de Saúde de Lisboa Ocidental, Lisbon, Portugal

³ Department of Cardiology, Hospital da Luz, Lisbon, Portugal

⁴ CHRC, Comprehensive Health Research Center; Associate Laboratory REAL (LA-REAL), Lisbon, Portugal

⁵ CoLab TRIALS, Évora, Portugal

Correspondent author:

Rui Pedro Albuquerque

Hospital de Egas Moniz, Departamento de Psiquiatria

Rua da Junqueira 126, 1349-019 Lisboa, Portugal

+351 96 792 70 76

rui.albuquerque@nms.unl.pt

We congratulate Brown et al. on their recent publication in *Circulation* regarding the 2024 update on the core components of cardiac rehabilitation (CR) programs.¹ We praise the inclusion of the new core component, "program quality," for its potential to enhance outcomes. Among the main challenges of CR, low levels of enrollment and participation are highlighted in this Scientific Statement, and the “program quality” component aims to address this issue.¹ We also emphasize that it specifically addresses depression improvement as one of the key patient-level performance measures.¹

Evidence suggests that enrollment and adherence problems are primarily driven by psychosocial factors.² Our comments focus on depression and cognitive impairment (CI) – two major issues in light of recent evidence on the link between heart and brain.^{1,3}

Depression is common in patients with cardiovascular diseases (CVDs)^{1,3} and has a significant negative impact on their clinical outcomes.¹ We fully support the 2024 update’s approach to assessing depression through validated screening tools or interviews, as outlined in the core component “psychosocial management.”¹ We would like to go further and argue that clinicians should start by asking simple open-ended questions about the patient’s current mood and pleasure in things, the core features of depression. Then, if one responds affirmatively to “Have you been feeling sad most of the time?” and “Have you lost interest in activities that you usually find enjoyable during the past weeks?” (no more than the 2-item version of the Patient Health Questionnaire by Spitzer et al.), there is a high likelihood of depression warranting further assessment. In settings where resources are limited and multidisciplinary teams scarce, such simple approaches integrated into everyday practice may be a step forward in identifying depression, one of the noble goals of the 2024 update.

Regarding CI, evidence suggests a nonlinear increase in white matter hyperintensities in healthy individuals without known CVDs as they age, with an inflection point around age 43, associated with cognitive dysfunction.⁴ These imaging findings are typically observed in older adults with cognitive disorders and CVDs.^{3,4} Therefore, it is unsurprising that up to 50% of patients in CR present cognitive disorders.⁵ These are largely attributable to the interplay between CVD and neurodegenerative processes, resulting in a cycle of emotional distress, cognitive dysfunction, and disability.³ Aging, and perhaps more

significantly CI, represent major barriers to the success of CR programs.^{1,2,5} We strongly endorse the 2024 update's recommendation to evaluate cognitive function as part of the core component "patient assessment".¹ This is crucial in addressing clinically significant CI – much underdiagnosed despite its prevalence in patients with CVDs,³ particularly those undergoing CR.⁵ Notably, feasible and valid cognitive screenings are needed to overcome the pitfalls of using instruments less sensitive to cases of executive dysfunction without major memory impairment. Brief tools like the Montreal Cognitive Assessment may be useful for this purpose and can be administered by trained non-medical staff in the CR setting.^{3,5}

Overall, we commend the emphasis placed on addressing mental health and cognitive disorders in the 2024 update.¹

References

1. Brown TM, Pack QR, Aberegg E, Brewer LC, Ford YR, Forman DE, Gathright EC, Khadanga S, Ozemek C, Thomas RJ; on behalf of the American Heart Association Exercise, Cardiac Rehabilitation and Secondary Prevention Committee of the Council on Clinical Cardiology; Council on Cardiovascular and Stroke Nursing; Council on Lifestyle and Cardiometabolic Health; and Council on Quality of Care and Outcomes Research. Core components of cardiac rehabilitation programs: 2024 update: A scientific statement from the American Heart Association and the American Association of Cardiovascular and Pulmonary Rehabilitation. *Circulation*. 2024;150:e●●●–e●●●. doi: 10.1161/CIR.0000000000001289
2. Ruano-Ravina A, Pena-Gil C, Abu-Assi E, Raposeiras S, van 't Hof A, Meindersma E, Bossano Prescott EI, González-Juanatey JR. Participation and adherence to cardiac rehabilitation programs. A systematic review. *Int J Cardiol*. 2016;223:436-443. doi: 10.1016/j.ijcard.2016.08.120
3. Testai FD, Gorelick PB, Chuang P-Y, Dai X, Furie KL, Gottesman RF, Iturrizaga JC, Lazar RM, Russo AM, Seshadri S, Wan EY; on behalf of the American Heart Association Stroke Council; Council on Cardiopulmonary, Critical Care, Perioperative and Resuscitation; Council on Cardiovascular and Stroke Nursing; and Council on Hypertension. Cardiac contributions to brain health: a scientific statement from the American Heart Association. *Stroke*. 2024;55:e●●●–e●●●. doi:10.1161/STR.0000000000000476
4. Moura AR, Lee S, Habeck C, Razlighi Q, Stern Y. The relationship between white matter hyperintensities and cognitive reference abilities across the life span. *Neurobiol Aging*. 2019;83:31-41. doi: 10.1016/j.neurobiolaging.2019.08.024
5. Salzwedel A, Heidler MD, Meng K, Schikora M, Wegscheider K, Reibis R, Völler H. Impact of cognitive performance on disease-related knowledge six months after multi-component rehabilitation in patients after an acute cardiac event. *Eur J Prev Cardiol*. 2019;26(1):46-55. doi: 10.1177/2047487318791609

Authors' Response to Letter to the Editor From Albuquerque et al

Todd M. Brown, MD, MSPH¹; Daniel E. Forman, MD²;

Emily C. Gathright, PhD³; Quinn R. Pack, MD, MSc⁴

¹Department of Medicine, Division of Cardiovascular Diseases, University of Alabama at Birmingham Heersink School of Medicine, Birmingham, AL

²Department of Medicine, Divisions of Cardiology and Geriatrics, University of Pittsburgh, Pittsburgh Geriatrics Research, Education and Clinical Center (GRECC), Pittsburgh, PA

³Department of Psychiatry and Human Behavior, Alpert Medical School of Brown University, Providence, RI

⁴Department of Healthcare Delivery and Population Sciences, University of Massachusetts Chan Medical School–Baystate, Springfield, MA

We appreciate the overall positive and supportive comments from Albuquerque and colleagues on the 2024 American Heart Association and American Association of Cardiovascular and Pulmonary Rehabilitation Scientific Statement updating the core components of cardiac rehabilitation programs and for their recommendations offering specific guidance for cardiac rehabilitation clinicians.

Use of the Patient Health Questionnaire-2 certainly is an appropriate approach to efficiently identify those patients most likely to be experiencing depressive symptoms. Program selection of the optimal validated screening tools are likely to be guided by local program and institutional structures and policies. Depending on program implementation options and resources, there may be situations when offering a more comprehensive initial screening is more efficient for clinicians than offering a shorter screening and responding with follow-up

assessment when indicated. In line with Albuquerque and colleagues' strong point, when administering more extensive scales such as the Patient Health Questionnaire-8, clinicians are encouraged to make note of patient responses on items assessing mood and anhedonia as part of contextualizing other reported somatic and cognitive symptoms. For additional guidance regarding selection of screening measures, programs are encouraged to consult with behavioral health professionals and published recommendations.^{1,2}

We also agree that cognitive impairment is highly prevalent in older adults with cardiovascular disease, with broad implications in regard to the broad pathophysiology associated with a cardiovascular disease event and the direct implications in regard to recovery (health literacy, decision making, adherence). Failure to incorporate cognitive assessment into cardiac rehabilitation management overlooks a key opportunity to incorporate appropriate supports (e.g., family, community) as part of recovery and to also address cognition as part of holistic cardiac rehabilitation care. Safety, goals of care, surveillance, and other basic aspects of management often benefit from tailored approaches for patients with cognitive limitations, especially if a patient's self-care (executive capacities) and/or self-reporting (verbal capacities) become less reliable. Risks of delirium and confusion are also important to consider. Similarly, it is important to consider hearing and depression, as interactions between hearing, mood, and cognition are common. In some instances, cognitive impairment may also be improved during the course of cardiac rehabilitation, especially if steps to optimize cardiac output, stabilize metabolism, reduce pain, and other clinical parameters are optimized. Cardiac rehab provides opportunities to optimize blood pressure, promote goal-directed medical therapy, ensure euvolemia, align management, deprescribe unnecessary meds (especially meds affecting brain health), and optimize nutrition. All are particularly important as they are less likely to be achieved in this compromised population. Cognitive impairment also is relevant in the considerations of best cardiac rehabilitation delivery, as access to site-based facilities is likely to

be more difficult, but so too are options for remote strategies, particularly those relying on technological adjuncts (e.g., relying on smartphone apps, wearables, or computers). Strategies for high intensity exercise training may be less useful than more easily guided exercise training regimens. Whereas the authors of the letter acknowledge the utility of the Montreal Cognitive Assessment (MoCA) to assess cognition, even more easily administered tools like the Mini-Cog can be effective as screening tools.

References

1. Lichtman JH, Bigger Jr JT, Blumenthal JA, et al. Depression and coronary heart disease: recommendations for screening, referral, and treatment: a science advisory from the American Heart Association Prevention Committee of the Council on Cardiovascular Nursing, Council on Clinical Cardiology, Council on Epidemiology and Prevention, and Interdisciplinary Council on Quality of Care and Outcomes Research: Endorsed by the American Psychiatric Association. *Circulation* 2008;118(17):1768-1775.
2. Jha MK, Qamar A, Vaduganathan M, Charney DS, Murrough JW. Screening and management of depression in patients with cardiovascular disease: JACC state-of-the-art review. *J Am Coll Cardiol* 2019;73(14):1827-1845.