

Correspondence to Circulation on the AACVPR/AHA/ACC SCIENTIFIC STATEMENT May 2019

Letter by Dalal et al Regarding Article, 'Home-Based Cardiac Rehabilitation A Scientific Statement From the American Association of Cardiovascular and Pulmonary Rehabilitation, the American Heart Association, and the American College of Cardiology'

Sir,

Given that participation in cardiac rehabilitation (CR) in patients with heart failure is particularly poor, with rates of <10% in the United States[1] and <20% in Europe,[2] the latest Scientific Statement From the American Association of Cardiovascular and Pulmonary Rehabilitation, the American Heart Association and the American College of Cardiology on Home based cardiac rehabilitation [HBCR] is timely and welcome.[3]

We would like to share our findings from the Rehabilitation EnAblement in Chronic Heart Failure (REACH-HF) randomized controlled trial of HBCR in patients with heart failure with reduced ejection fraction undertaken across four centres in the United Kingdom.[4]

The REACH-HF HBCR programme is a novel, theory-based, healthcare professional-facilitated home-based self-management intervention. It was co-developed with patients, caregivers and clinicians and was subjected to the rigours of a multicentre randomised trial. We believe this to be the largest trial of HBCR in heart failure to date. Importantly, our results show that it is possible to have both statistically significant and clinically important improvement in patients' health-related quality of life - the primary outcome of our trial.[4] We undertook a cost effectiveness modelling analysis, based on this trial, and demonstrated the long term cost effectiveness of HBCR programmes in heart failure.[5] Our analysis indicated that the REACH-HF intervention has an average cost per quality-adjusted life year gained (QALY) of £1,720 (US \$2188) with a 78 % probability of being cost effective at the accepted threshold of good value for money for the United Kingdom National Health Service of ≤ £20,000 (US \$25,444)/QALY gained.[5]

HBCR programmes, like REACH-HF, could offer a solution, particularly to groups such as older adults and those with multiple morbidities who may struggle to attend centre-based CR. The mean age of patients in the REACH-HF study was 70 years and the majority had co-morbidities, such as arthritis and atrial fibrillation.[4]

The added value of our trial was that it integrated HBCR within existing heart failure services, which is now helping shape a national roll out of the programme. With the support of research funding from the National Institute of Health Research (NIHR), we have started a demonstration project to implement the REACH-HF HBCR programme in four selected 'beacon' sites in the United Kingdom. Using a national audit database, we are able to track short and long term outcomes of HBCR, including patient adherence. This data will be fed back to the CR centres to optimise intervention fidelity, promote quality improvement and also inform CR related policy decisions.

Affordable HBCR, like REACH-HF,[4,5] can make CR more accessible and should be offered as an alternative to centre-based CR to improve the 'significant underuse of CR by eligible patients'.[3] We agree that more evidence is needed to test the feasibility and cost-effectiveness of HBCR interventions, like REACH-HF, in other healthcare jurisdictions.

We would welcome collaboration with colleagues in the United States and elsewhere in order to test the feasibility of REACH-HF like HBCR programmes in the context of their healthcare system.

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References

1. Golwala H, Pandey A, Ju C, Butler J, Yancy C, Bhatt DL, Hernandez AF, Fonarow GC. Temporal trends and factors associated with cardiac rehabilitation referral among patients hospitalized with heart failure: findings from Get With The Guidelines–Heart Failure Registry. *J Am Coll Cardiol*. 2015; 2015; 66(8):917–926.
2. Bjarnason-Wehrens B, McGee H, Zwisler A-D, Piepoli MF, Benzer W, Schmid J-P, Dendale P, Pogossova N-GV, Zdrengeha D, Niebauer J, Mendes M. Cardiac rehabilitation in Europe: results from the European Cardiac Rehabilitation Inventory Survey. *Eur J Cardiovasc Prev Rehabil*. 2010; 17(4):410–418.
3. Thomas RJ, Beatty AL, Beckie TM, LaPrincess BC, Brown TM, Forman DE, Franklin BA, Keteyian SJ, Kitzman DW, Regensteiner JG, Sanderson BK, Whooley MA. Home-Based Cardiac Rehabilitation: A Scientific Statement From the American Association of Cardiovascular and Pulmonary Rehabilitation the American Heart Association, and the American College of Cardiology. *Circulation*. 2019; 139:00–00. doi:10.1161/CIR.0000000000000663
4. Dalal HM, Taylor RS, Jolly K, Davis RC, Doherty P, Miles J, van Lingen R, Warren FC, Green C, Wingham J, Greaves C, Sadlers S, Hillsdon M, Abraham C, Britten N, Frost J, Singh S, Hayward C, Eyre V, Paul K, Lang CC, Smith K. The effects and costs of home-based rehabilitation for heart failure with reduced ejection fraction: The REACH-HF multicentre randomized controlled trial. *Eur J Prev Cardiol*. 2019; 26(3):267-72. doi.org/ 10.1177/2047487318806358.
5. Taylor RS, Sadler S, Dalal HM, Warren FC, Jolly K, Davis R, Doherty P, Greaves C, Miles J, Wingham J, Hillsdon M, Abraham C, Frost J, Singh SJ, Hayward C, Paul K, Lang CC, Smith K. The cost effectiveness of REACH-HF and home-based cardiac rehabilitation in the treatment of heart failure with reduced ejection fraction: a decision model-based analysis. *Eur Prev Cardiol*. 2019; doi: 10.1177/2047487319833507.

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Dear Dr. Dalal and Colleagues:

Thank you for sharing these interesting findings from the REACH-HF trial.

Sincerely,

Randal Thomas MD

Mary Whooley MD

for the AHA/ACC/AACVPR Scientific Writing Group