European Heart Journal Supplements (2019) **21** (Supplement L), L32–L35
The Heart of the Matter
doi:10.1093/eurheartj/suz243

ESC European Society of Cardiology

Care plans for the older heart failure patient

Loreena Hill[1]*, Matthew A. Carson[1], and Cristiana Vitale[2,3]

[1]*School of Nursing and Midwifery, Queen's University, Medical Biology Centre, 97 Lisburn Road, Belfast, BT9 7BL, UK*
[2]*Department of Medical Sciences, Centre for Clinical and Basic Research, IRCCS San Raffaele Pisana, Via della Pisana, 235 00163 Rome, Italy; and*
[3]*St George's Hospital, Cranmer Terrace, SW17 ORE, London, UK*

KEYWORDS
Elderly;
Heart failure;
Care plan;
Frailty

Heart failure (HF) professionals are managing an older population with multiple, often interconnected comorbidities. The average age of the HF patient has increased substantially and many have a number of comorbidities. For the older HF patient, diligent planning of care has the potential to reduce hospitalization, improve quality of life and mortality; nevertheless, this vital component is often overlooked. Frailty, cachexia, sarcopenia, and cognitive impairment are all common in the older HF patient and require special care considerations. Many older HF patients live for many years with troublesome symptoms that could be better addressed through the incorporation of a palliative approach to care. Effective care plans can help patients maximize their health potential through both lifestyle and pharmacological interventions. However, current evidence remains scarce on what constitutes an optimal plan, therefore further studies are urgently needed. We review the care that could be implemented for the complex older HF patient with comorbidities.

Introduction

It is evident within daily clinical practice and the recent design of patient-centred trials, heart failure (HF) professionals are managing an older population with multiple, often interconnected comorbidities.[1-6] Over the last decade, the average age of the HF patient has increased from 76 to 77 years,[7] with many living with at least four comorbidities.[8-10] In the American OPTIMISE-HF registry, post-discharge mortality increased by 22% for every 10-year increase in age.[11] In parallel to an ageing population, there is growing pressure on limited healthcare resources, in terms of finance, personnel, and place of care. For the older HF patient, diligent planning of care has the potential to reduce hospitalization, improve quality of life and mortality;[12,13] nevertheless, this vital component is often overlooked.

Frailty *et al.*

A number of conditions have become associated with the older HF patient, for example frailty,[14] cachexia,[15] sarcopenia,[16,17] and cognitive impairment including dementia, however, these illnesses can also occur independent of age.[18] Cachexia and sarcopenia are syndromes associated with unintentional weight loss; cachexia is frequently linked to cancer and end-stage HF, whereas sarcopenia is primarily considered a disease of the elderly. When present sarcopenia can, however, secondarily worsen integrated cardiovascular function.[19] In a recent prospective study (SICA-HF) including 207 ambulatory male chronic HF patients, 18.8% had cachexia, 14.4% had sarcopenia, and 6.7% had both.[20] Frailty has recently been defined by an Heart Failure Association of the European Society of Cardiology (HFA of ESC) committee as a *multidimensional dynamic state, independent of age, that makes the individual with HF more vulnerable to the effect of stressors.*[8] Almost half of older HF patients experience frailty,[21] which can occur in tandem with cachexia/sarcopenia.[22] Studies show the detrimental impact these syndromes have on patient outcomes with reduced physical function, poor quality of life and ominous prognosis.[23-25] Many older HF patients live for many years with troublesome symptoms that could be better addressed through the incorporation of a palliative approach to care.[26] Effective care plans can

*Corresponding author. Tel: +44 (0)28 9097 5756, Email: l.hill@qub.ac.uk

help patients maximize their health potential through both lifestyle and pharmacological interventions. However, current evidence remains limited on what constitutes an optimal plan,[27-30] therefore further studies are urgently needed. Most randomized clinical trials have excluded complex elderly patients with comorbidities, an approach that needs to be addressed within future trials.[31,32]

Currently, frailty, cachexia,[33] and sarcopenia[20] all remain poorly diagnosed in routine clinical practice, due to a lack of clinically appropriate and validated tools.[34-36] There is also the possibility of misdiagnosis, hence a common-sense approach is required. For example, in the case of a patient who presents with symptoms of nausea and/or anorexia, a holistic assessment may uncover causative factors of medications (e.g. digoxin), ascites or a gastrointestinal complaint. A consensus definition of cachexia[37] aimed to improve the diagnosis of the syndrome, however, there remains a current need to provide a validated assessment tool to enable the earlier identification of 'pre-cachexia'.[38,39] Furthermore, the HFA/ESC statement supports the urgent need for a validated tool for the identification and assessment of frailty.[8]

Treatment approaches

Dietary information and nutritional advice may help mitigate weight loss and improve exercise tolerance and thereby quality of life. Increasing protein and calorie intake, for example via taking nutritional and vitamin supplementation or appropriate dietary advice have been shown to be beneficial.[40-43] Input from a dietician should be considered to offer advice focused on tailored meal plans.[44] ESC guidelines[45] recommend that HF patients should avoid excessive salt intake (>6 g/day), however supportive evidence remains limited,[46] particularly for the older HF patient. Other approaches show potential for future advances.[47,48]

Regular exercise is a Class 1, level A recommendation for all HF patients,[24,49] which for the older patient may relate to engagement in some level of physical activity where possible.[50,51] Frailty,[52,53] as well as comorbidities such as arthritis may make this more challenging, therefore appropriate physical support (i.e. walking aid, well-fitted shoes) may be appropriate, particularly if the patient is prone to falls. Cardiac rehabilitation offers an ideal environment to assess and motivate patients to undertake a regular exercise regimen. A number of cardiac rehabilitation programmes include physiotherapists, enabling tailored advice to patients' abilities and needs. An exemplar programme is the Cachexia and Fatigue Management Programme, which includes a high protein intake, use of an anti-inflammatory agent and tailored resistance exercise programme to counteract muscle wasting and fatigue.[54] Future large-scale studies should evaluate the impact of multimodal interventions to facilitate improvements in patient outcomes. In addition, future novel programmes may be developed to support conventional exercise training.[55,56]

Other approaches

For the older HF patient, there is an increased likelihood of cognitive decline as a result of the condition and the ageing process itself. It is therefore vital the patient's next of kin and or family members are involved in critical discussions and decision-making. Informal caregivers play a crucial role in promoting the patient's self-care, medication adherence and well-being, resulting in a positive impact on quality of life and rehospitalizations.[57,58] Support and involvement of a social worker in the patient's care may be required. Furthermore, with the growing evidence to support the use of telemedicine[59-62] more supportive care can be provided in the patient's home; this being dependent on the acceptability of the patient to the use of this technology.

Many older HF patients are on multiple prescribed medication, due to their co-existing comorbidities.[63] Information should be provided, alongside practical tools, such as a blister pack, alarm reminders to take medications in order to promote independence and adherence with medications.[64] Collaboration with the community pharmacist and/or healthcare professional will enable monitoring of adherence, which has been shown to be a major factor in negative patient outcomes.[65]

Resources are lacking to recognize and effectively plan and implement the care of these more complex elderly patients. Given the debilitating nature of the symptoms many patients would benefit from early integration of palliation into HF management.[66-68] Undoubtedly, this is a cohort of often overlooked patients, requiring further attention and research to ensure we are providing effective treatments and care.

Funding

This paper is part of a supplement funded by the Heart Failure Association of the European Society of Cardiology.

Conflict of interest: Dr Hill received honorarium from Novartis. Other authors have nothing to declare.

References

1. Masoudi F, Havranek EP, Wolfe P, Gross CP, Rathore SS, Steiner JF, Ordin DL, Krumholz HM. Most hospitalized older persons do not meet the enrollment criteria for clinical trials in heart failure. *Am Heart J* 2003;**146**:250–257.
2. Komajda M, Hanon O, Hochadel M, Lopez-Sendon JL, Follath F, Ponikowski P, Harjola V-P, Drexler H, Dickstein K, Tavazzi L, Nieminen M. Contemporary management of octogenarians hospitalized for heart failure in Europe: Euro Heart Failure Survey II. *Eur Heart J* 2008;**30**:478–486.
3. Rosano GMC, Seferovic P. The management of diabetic patients with heart failure. *Int Cardiovasc Forum J* 2017;**10**:58–62.
4. Spoletini I, Seferovic P. The management of co-morbidities in patients with heart failure—angina and coronary disease. *Int Cardiovasc Forum J* 2017;**10**:65–67.
5. Stewart Coats AJ, Rosano GM, Lopatin YM. The management of co-morbidities in patients with heart failure—lung disorders. *Int Cardiovasc Forum J* 2017;**10**:73–74.
6. Anker MS, von Haehling S, Landmesser U, Coats AJS, Anker SD. Cancer and heart failure-more than meets the eye: common risk factors and co-morbidities. *Eur J Heart Fail* 2018;**20**:1382–1384.
7. Cowie M, Wood D, Coats A, Thompson S, Poole-Wilson P, Suresh V. Incidence and aetiology of heart failure: a population-based study. *Eur Heart J* 1999;**20**:421–428.
8. Conrad N, Judge A, Tran J, Mohseni H, Hedgecott D, Crespillo A, et al. Temporal trends and patterns in heart failure incidence: a population-based study of 4 million individuals. *Lancet* 2018;**391**:10–16.

9. McDonagh T, Damy T, Doehner W, Lam CSP, Sindone A, van der Meer P, Cohen-Solal A, Kindermann I, Manito N, Pfister O, Pohjantähti-Maaroos H, Taylor J, Comin-Colet J. Screening, diagnosis and treatment of iron deficiency in chronic heart failure: putting the 2016 European Society of Cardiology heart failure guidelines into clinical practice. *Eur J Heart Fail* 2018;**20**:1664–1672.
10. Costanzo MR, Ponikowski P, Coats A, Javaheri S, Augostini R, Goldberg LR, Holcomb R, Kao A, Khayat RN, Oldenburg O, Stellbrink C, McKane S, Abraham WT; remede® System Pivotal Trial Study Group. Phrenic nerve stimulation to treat patients with central sleep apnoea and heart failure. *Eur J Heart Fail* 2018;**20**:1746–1754.
11. O'Connor C, Abraham W, Albert N, Clare R, Stough W, Gheorghiade M, et al. Predictors of mortality after discharge in patients hospitalized with heart failure: an analysis from the Organized Program to Initiate Lifesaving Treatment in Hospitalized Patients with Heart Failure (OPTIMIZE-HF) Author links open overlay panel. *Am Heart J* 2008;**156**:662–673.
12. McDonagh T, Blue L, Clark AL, Dahlström U, Ekman I, Lainscak M, McDonald K, Ryder M, Strömberg A, Jaarsma T. European Society of Cardiology Heart Failure Association Standards for delivering heart failure care. *Eur J Heart Fail* 2011;**13**:235–241.
13. Lambrinou E, Kalogirou F, Lamnisos D, Sourtzi P. Effectiveness of heart failure management programmes with nurse-led discharge planning in reducing re-admissions: a systematic review and meta-analysis Author links open overlay panel. *Int J Nurs Stud* 2012;**49**:610–624.
14. Tsutsumimoto K, Doi T, Makizako H, Hotta R, Nakakubo S, Makino K, Suzuki T, Shimada H. Aging-related anorexia and its association with disability and frailty. *J Cachexia Sarcopenia Muscle* 2018;**9**:834–843.
15. Scherbakov N, Doehner W. Cachexia as a common characteristic in multiple chronic disease. *J Cachexia Sarcopenia Muscle* 2018;**9**:1189–1191.
16. Morley JE. Treatment of sarcopenia: the road to the future. *J Cachexia Sarcopenia Muscle* 2018;**9**:1196–1199.
17. Martone AM, Bianchi L, Abete P, Bellelli G, Bo M, Cherubini A, Corica F, Di Bari M, Maggio M, Manca GM, Marzetti E, Rizzo MR, Rossi A, Volpato S, Landi F. The incidence of sarcopenia among hospitalized older patients: results from the Glisten study. *J Cachexia Sarcopenia Muscle* 2017;**8**:907–914.
18. Vitale C, Jankowska E, Hill L, Piepoli M, Doehner W, Anker S. HFA-ESC position paper on frailty in patients with heart failure. *Eur Heart J* 2019;doi: 10.1002/ejhf.1611 [Epub ahead of print].
19. Yoo JI, Kim MJ, Na JB, Chun YH, Park YJ, Park Y, Hah YS, Ha YC, Park KS. Relationship between endothelial function and skeletal muscle strength in community dwelling elderly women. *J Cachexia Sarcopenia Muscle* 2018;**9**:1034–1041.
20. Emami A, Saitoh M, Valentova M, Sandek A, Evertz R, Ebner N, Loncar G, Springer J, Doehner W, Lainscak M, Hasenfuß G, Anker SD, von Haehling S. Comparison of sarcopenia and cachexia in men with chronic heart failure: results from the Studies Investigating Comorbidities Aggravating Heart Failure (SICA-HF). *Eur J Heart Fail* 2018;**20**:1580–1587.
21. Denfeld Q, Winters-Stone K, Mudd J, Gelow J, Kurdi S, Lee C. The prevalence of frailty in heart failure: a systematic review and meta-analysis. *Int J Cardiol* 2017;**236**:283–289.
22. Saitoh M, Ishida J, Doehner W, von Haehling S, Anker MS, Coats AJS, Anker SD, Springer J. Sarcopenia, cachexia, and muscle performance in heart failure: review update 2016. *Int J Cardiol* 2017;**238**:5–11.
23. McDonagh T, Martin L, Ferguson C, Jha SR, Macdonald PS, Davidson PM, Newton PJ. Frailty assessment instruments in heart failure: a systematic review. *Eur J Cardiovasc Nurs* 2018;**17**:23–35.
24. Anker S, Steinborn W, Strassburg S. Cardiac cachexia. *Ann Med* 2004;**36**:518–529.
25. Vidán M, Blaya-Novakova V, Sánchez E, Ortiz J, Serra-Rexach J, Bueno H. Prevalence and prognostic impact of frailty and its components in non-dependent elderly patients with heart failure. *Eur J Heart Fail* 2016;**18**:869–875.
26. Schüchen RH, Mücke M, Marinova M, Kravchenko D, Häuser W, Radbruch L, Conrad R. Systematic review and meta-analysis on non-opioid analgesics in palliative medicine. *J Cachexia Sarcopenia Muscle* 2018;**9**:1235–1254.
27. von Haehling S, Ebner N, dos Santos M, Springer J, Anker S. Muscle wasting and cachexia in heart failure: mechanisms and therapies. *Nat Rev Cardiol* 2017;**14**:323–341.
28. Loncar G, Springer J, Anker M, Doehner W, Lainscak M. Cardiac cachexia: hic et nunc. *J Cachexia Sarcopenia Muscle* 2016;**7**:246–260.
29. Shears M, McGolrick D, Waters B, Jakab M, Boyd J, Muscedere J. Frailty measurement and outcomes in interventional studies: protocol for a systematic review of randomised control trials. *BMJ Open* 2017;**7**:e018872.
30. Hill E, Taylor J. Chronic heart failure care planning: considerations in older patients. *Card Fail Rev* 2017;**03**:46–51.
31. Packer M, Pitt B. Future large-scale clinical trials in cardiovascular medicine: challenges and uncertainties. *Eur J Heart Fail* 2018;**20**:1645–1648.
32. Cotter G, Davison BA. Unmodifiable events, heart failure research, and 'risk-based monitoring' in large studies-the unholy triumvirate. *Eur J Heart Fail* 2018;**20**:1639–1644.
33. von Haehling S, Anker SD. Once I get on a puzzle, I can't get off: cachexia and wasting in 2018. *J Cachexia Sarcopenia Muscle* 2018;**9**:1021–1022.
34. Jha S, Ha HS, Hickman L, Hannu M, Davidson PM, Macdonald PS, Newton PJ. Frailty in advanced heart failure: a systematic review. *Heart Fail Rev* 2015;**20**:553–560.
35. Dhillon R, Hasni S. Pathogenesis and management of sarcopenia. *Clin Geriatr Med* 2017;**33**:17–26.
36. Buckinx F, Landi F, Cesari M, Fielding RA, Visser M, Engelke K, Maggi S, Dennison E, Al-Daghri NM, Allepaerts S, Bauer J, Bautmans I, Brandi ML, Bruyère O, Cederholm T, Cerreta F, Cherubini A, Cooper C, Cruz-Jentoft A, McCloskey E, Dawson-Hughes B, Kaufman J-M, Laslop A, Petermans J, Reginster J-Y, Rizzoli R, Robinson S, Rolland Y, Rueda R, Vellas B, Kanis JA. Pitfalls in the measurement of muscle mass: a need for a reference standard. *J Cachexia Sarcopenia Muscle* 2018;**9**:269–278.
37. Evans W, Morley JE, Argilés J, Bales C, Baracos V, Guttridge D, Jatoi A, Kalantar-Zadeh K, Lochs H, Mantovani G, Marks D, Mitch WE, Muscaritoli M, Najand A, Ponikowski P, Rossi Fanelli F, Schambelan M, Schols A, Schuster M, Thomas D, Wolfe R, Anker SD. Cachexia: a new definition. *Clin Nutr* 2008;**27**:793–799.
38. Carson M, Reid J, Hill L, Fitzsimons D. The need for a specific definition of cardiac cachexia. *Eur J Cardiovasc Nurs* 2019;**18**:524–525.
39. Ventura HO, Carbone S, Lavie CJ. Muscling up to improve heart failure prognosis. *Eur J Heart Fail* 2018;**20**:1588–1590.
40. von Haehling S, Doehner W, Anker S. Nutrition, metabolism, and the complex pathophysiology of cachexia in chronic heart failure. *Cardiovasc Res* 2007;**73**:298–309.
41. Witte KK, Nikitin NP, Parker AC, von Haehling S, Volk HD, Anker SD, Clark AL, Cleland JG. The effect of micronutrient supplementation on quality-of-life and left ventricular function in elderly patients with chronic heart failure. *Eur Heart J* 2005;**26**:2238–2224.
42. Metra M. August 2018 at a glance: patients' outcomes, obesity and medical therapy. *Eur J Heart Fail* 2018;**20**:1167–1168.
43. Carbone S, Elagizi A, Lavie CJ. Obesity and mortality risk in heart failure: when adipose tissue distribution matters. *Eur J Heart Fail* 2018;**20**:1278–1280.
44. Streng KW, Voors AA, Hillege HL, Anker SD, Cleland JG, Dickstein K, Filippatos G, Metra M, Ng LL, Ponikowski P, Samani NJ, van Veldhuisen DJ, Zwinderman AH, Zannad F, Damman K, van der Meer P, Lang CC. Waist-to-hip ratio and mortality in heart failure. *Eur J Heart Fail* 2018;**20**:1269–1277.
45. Ponikowski P, Voors AA, Anker SD, Bueno H, Cleland JGF, Coats AJS, Falk V, González-Juanatey JR, Harjola VP, Jankowska EA, Jessup M, Linde C, Nihoyannopoulos P, Parissis JT, Pieske B, Riley JP, Rosano GMC, Ruilope LM, Ruschitzka F, Rutten FH, van der Meer P; ESC Scientific Document Group. *Eur Heart J* 2016;**37**:2129–2200.
46. Seferovic P, Ponikowski P, Anker SD, Bauersachs J, Chioncel O, Cleland JGF, Boer RA, Drexel H, Ben Gal T, Hill L, Jaarsma T, Jankowska EA, Anker MS, Lainscak M, Lewis BS, McDonagh T, Metra M, Milicic D, Mullens W, Piepoli MF, Rosano G, Ruschitzka F, Volterrani M, Voors AA, Filippatos G, Coats AJS. Clinical practice update on heart failure 2019: pharmacotherapy, procedures, devices and patient management. An expert consensus meeting report of The Heart Failure Association of the European Society of Cardiology. *Eur J Heart Fail* 2019;**21**:1169.
47. Dziegala M, Josiak K, Kasztura M, Kobak K, von Haehling S, Banasiak W, Anker SD, Ponikowski P, Jankowska E. Iron deficiency as energetic insult to skeletal muscle in chronic diseases. *J Cachexia Sarcopenia Muscle* 2018;**9**:802–815.

48. Vitale C, Ilaria S, Rosano GM. Pharmacological interventions effective in improving exercise capacity in heart failure. *Card Fail Rev* 2018;**4**:1–27.
49. Taylor RS, Walker S, Smart NA, Piepoli MF, Warren FC, Ciani O, O'Connor C, Whellan D, Keteyian SJ, Coats A, Davos CH, Dalal HM, Dracup K, Evangelista L, Jolly K, Myers J, McKelvie RS, Nilsson BB, Passino C, Witham MD, Yeh GY, Zwisler AO; ExTraMATCH II Collaboration. Impact of exercise-based cardiac rehabilitation in patients with heart failure (ExTraMATCH II) on mortality and hospitalisation: an individual patient data meta-analysis of randomised trials. *Eur J Heart Fail* 2018;**20**:1735–1743.
50. Piepoli M, Conraads V, Corrà U, Dickstein K, Francis DP, Jaarsma T, McMurray J, Pieske B, Piotrowicz E, Schmid J-P, Anker SD, Solal AC, Filippatos GS, Hoes AW, Gielen S, Giannuzzi P, Ponikowski PP. Exercise training in heart failure: from theory to practice. A consensus document of the Heart Failure Association and the European Association for Cardiovascular Prevention and Rehabilitation. *Eur J Heart Fail* 2011;**13**:347–357.
51. Patel HC, Kaye DM. Exercise training in heart failure: a long way to go yet. *Eur J Heart Fail* 2018;**20**:1744–1745.
52. Flint K. Frailty in TOPCAT: a deep dive into the deficit index approach for defining frailty. *Eur J Heart Fail* 2018;**20**:1578–1579.
53. Vitale C, Spoletini I, Rosano GM. Frailty in heart failure: implications for management. *Card Fail Rev* 2018;**4**:104–106.
54. Watkins F, Webster B, Tulloch S, Bennett C, McCarthy A. A multimodal, interdisciplinary programme for the management of cachexia and fatigue. *Int J Palliat Nurs* 2012;**18**:85–90.
55. Adams V. Electromyostimulation to fight atrophy and to build muscle: facts and numbers. *J Cachexia Sarcopenia Muscle* 2018;**9**:631–634.
56. von Haehling S. Casting the net broader to confirm our imaginations: the long road to treating wasting disorders. *J Cachexia Sarcopenia Muscle* 2017;**8**:870–880.
57. Čelutkienė J, Vaitkevičius A, Jakštienė S, Jatužis D. Expert opinion. Cognitive decline in heart failure: more attention is needed. *Card Fail Rev* 2016;**2**:106–109.
58. Clark A, Wiens KS, Banner D, Kryworuchko J, Thirsk L, McLean L, Currie K. A systematic review of the main mechanisms of heart failure disease management interventions. *Heart* 2016;**102**:707–711.
59. Koehler F, Koehler K, Deckwart O, Prescher S, Wegscheider K, Kirwan B-A, Winkler S, Vettorazzi E, Bruch L, Oeff M, Zugck C, Doerr G, Naegele H, Störk S, Butter C, Sechtem U, Angermann C, Gola G, Prondzinsky R, Edelmann F, Spethmann S, Schellong SM, Schulze PC, Bauersachs J, Wellge B, Schoebel C, Tajsic M, Dreger H, Anker SD, Stangl K. Efficacy of telemedical interventional management in patients with heart failure (TIM-HF2): a randomised, controlled, parallel-group, unmasked trial. *Lancet* 2018;**392**:1047–1057.
60. Boyne J, Vrijhoef HJ, Spreeuwenberg M, De Weerd G, Kragten J, Gorgels AP. Effects of tailored telemonitoring on heart failure patients' knowledge, self-care, self-efficacy and adherence: a randomized controlled trial. *Eur J Cardiovasc Nurs* 2014;**13**:243–252.
61. Piepoli MF. E-health in self-care of heart failure patients: promises become reality. *Eur J Heart Fail* 2019;**21**:247–248.
62. Koehler F, Koehler K, Deckwart O, Prescher S, Wegscheider K, Winkler S, Vettorazzi E, Polze A, Stangl K, Hartmann O, Marx A, Neuhaus P, Scherf M, Kirwan BA, Anker SD. Telemedical Interventional Management in Heart Failure II (TIM-HF2), a randomised, controlled trial investigating the impact of telemedicine on unplanned cardiovascular hospitalisations and mortality in heart failure patients: study design and description of the intervention. *Eur J Heart Fail* 2018;**20**:1485–1493.
63. McCarthy CP, Vaduganathan M, Pandey A. Developing evidence-based and accountable health policy in heart failure. *Eur J Heart Fail* 2018;**20**:1653–1656.
64. Cline C, Björck-Linné AK, Israelsson BYA, Willenheimer RB, Erhardt LR. Non-compliance and knowledge of prescribed medication in elderly patients with heart failure. *Eur J Heart Fail* 1999;**1**:145–151.
65. Linné AB, Liedholm H, Israelsson B. Effects of systematic education on heart failure patients knowledge after 6 months. A randomised control trial. *Eur J Heart Fail* 1999;**1**:219–228.
66. Campbell RT, Petrie MC, McMurray J. Talking to patients with heart failure about end of life. *Eur J Heart Fail* 2018;**20**:1763–1765.
67. Campbell RT, Petrie MC, Jackson CE, Jhund PS, Wright A, Gardner RS, Sonecki P, Pozzi A, McSkimming P, McConnachie A, Finlay F, Davidson P, Denvir MA, Johnson MJ, Hogg KJ, McMurray J. Which patients with heart failure should receive specialist palliative care? *Eur J Heart Fail* 2018;**20**:1338–1347.
68. Jaarsma T, van der Wal M, Hjelmfors L, Strömberg A. Talking about palliative care in heart failure. *Eur J Heart Fail* 2018;**20**:1348–1349.