

## Hospice Use Among Patients with Heart Failure

Sarah H Cross,<sup>1</sup> Arif H Kamal,<sup>2,3</sup> Donald H Taylor Jr<sup>1,4,5</sup> and Haider J Warraich<sup>6</sup>

1. Sanford School of Public Policy, Duke University, Durham, NC, US; 2. Duke Cancer Institute, Durham, NC, US; 3. Duke Fuqua School of Business, Duke University, Durham, NC, US; 4. Margolis Center for Health Policy, Duke University, Durham, NC, US; 5. Duke Clinical Research Institute, Durham, NC, US; 6. Department of Medicine, Division of Cardiology, Duke University Medical Center, Durham, NC, US

### Abstract

Despite its many benefits, hospice care is underused for patients with heart failure. This paper discusses the factors contributing to this underuse and offers recommendations to optimise use for patients with heart failure and proposes metrics to optimise quality of hospice care for this patient group.

### Keywords

Heart failure, hospice, palliative care, end of life care

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**Correspondence:** Haider J Warraich, 2301 Erwin Road, DUMC 3485, Durham, NC 27710, US. E: [haider.warraich@duke.edu](mailto:haider.warraich@duke.edu)

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Heart failure (HF) is estimated to affect 26 million people worldwide and is responsible for an annual global economic burden of US\$108 billion.<sup>1,2</sup> An ageing population and a reduction in mortality from other conditions such as acute MI are expected to result in an increased HF prevalence throughout much of the world.<sup>1,3–6</sup> The prevalence of HF has particularly increased among those aged 85 years and older.<sup>7,8</sup> HF is an especially burdensome disease both physically and psychosocially. Compared with those with other chronic illnesses, patients with HF have significantly more impairment in quality of life.<sup>9</sup> According to the WHO, nearly 39% of adults needing palliative care at the end of life have cardiovascular disease.<sup>10</sup> Exacerbations in symptoms and carers being unprepared for this are likely to contribute to HF being a leading cause of hospital readmissions.<sup>11–13</sup> Hospice care can ameliorate distress at the end of life for patients with HF, yet it is underused in this population.<sup>14–17</sup> Increasing the use of hospice care among this population should be a priority, although determining when a patient with HF should be referred to hospice care remains a challenge. In this paper we discuss the benefits of hospice care for people with HF, detail the factors contributing to the underuse of hospices among people with HF and offer recommendations to optimise hospice use.

### Benefits of Hospice Care for Patients with Heart Failure

Hospice care is team-based palliative care typically reserved for those with a life expectancy of 6 months or less. It can be provided to any patient with a life-limiting illness and combines medical care, pain management and emotional and spiritual support. While palliative care may be received alongside disease-directed treatment, hospice care focuses on comfort and quality of life when a cure is no longer possible. It is the model for high-quality patient-centred care for those facing a life-limiting illness.<sup>18</sup> Hospice care is typically provided in the place where a patient lives – whether their own home or in a care home or

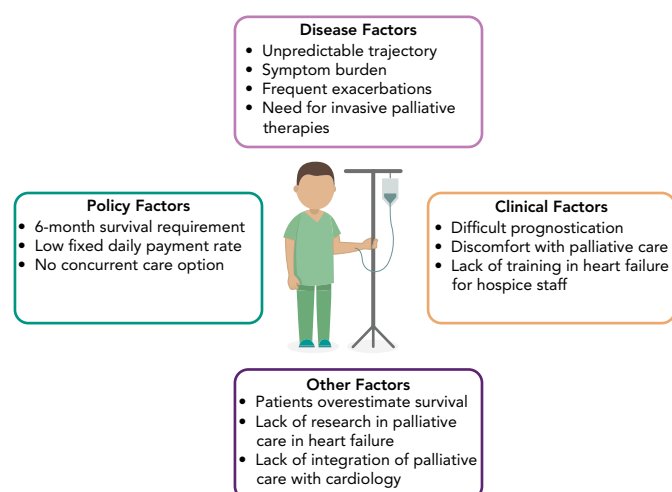
nursing home. Many countries also have inpatient hospice facilities that may be free-standing or located in a hospital; however, the structure of these services differs between countries. Patients receiving hospice care generally experience lower rates of hospitalisation, admission to intensive care and invasive procedures at the end of life.<sup>19</sup> Additionally, hospice care often improves symptom distress, care quality, caregiver outcomes and patient and family satisfaction.<sup>20–24</sup> Some researchers have found that hospice and palliative care is associated with longer survival in some HF patients.<sup>14,19,22,25</sup>

In the US, roughly one in four Medicare beneficiaries hospitalised for decompensated HF are readmitted within 30 days of discharge.<sup>26</sup> Preventable hospital readmissions are estimated to cost the US healthcare system US\$25 billion each year and place patients at greater risk of complications and infections.<sup>27</sup> Similar rates of hospital readmissions with a similar burden have also been documented around the world.<sup>28,29</sup> Four in 10 patients with HF in Greece were readmitted to hospital in less than a year, according to one study.<sup>30</sup> Inadequate follow-up care is a major factor in hospital readmissions and hospice use has been associated with a lower risk of 30-day hospital readmission among patients with HF.<sup>31</sup> Another line of research shows that hospice care leads to reduced medical costs while providing these well-established benefits for seriously ill patients.<sup>19,22,25,31</sup> Although most research on the cost-effectiveness of hospice care has been conducted in the US, reduced costs from hospice use have also been documented in Israel.<sup>32</sup>

### Contributing Factors to Hospice Underuse in People with Heart Failure

Despite the benefits of hospice care, patients face significant barriers to receiving timely referrals. In the UK, only 4% of patients with HF have received care from a hospice or palliative care team.<sup>33</sup> Nearly one-third

**Figure 1: Barriers to Hospice Use in Patients with Heart Failure**



of American patients with HF receive hospice care at the time of death and those who do tend to enrol late in the course of their disease.<sup>34–37</sup> In one study of hospitalised patients with HF, those discharged to hospice care had a median survival of 11 days and nearly one-quarter of patients died within 3 days.<sup>34</sup> The short length of stay in hospices for many patients with HF is especially concerning, as this suggests that patients and their families may not receive the full benefit of the care. Multiple studies have found an association between family perception of a late referral to hospice and a poorer care experience for patients and family members.<sup>21,38–40</sup> Patients with short lengths of stay in hospices are also less likely to receive care at home despite this being the preference of many.<sup>41,42</sup> We have identified seven major themes that drive hospice underuse in HF.

## Disease Trajectory

Despite the benefits of hospice care, patients face significant barriers to receiving timely referrals to that care stemming from the unique course of HF and the difficulty there is in providing an accurate prognosis (Figure 1). Patients with HF tend to experience a gradual decline punctuated by intermittent exacerbations that, when treated, can result in a near return to the patient’s pre-exacerbation status.<sup>43,44</sup> As it is not possible to know which exacerbation will be fatal, death often seems unexpected.<sup>45</sup> The fact that a patient’s prognosis is the predominant criterion used to indicate eligibility for hospice care makes it difficult to know when it is appropriate for patients with HF to be referred.<sup>46</sup> Patients who experience a more rapid decline may better recognise their limited life expectancy and be more willing to shift from conventional to palliative care and be motivated to seek additional support.<sup>47–49</sup> Advance care planning (ACP), which has been associated with increased hospice use, is critical given HF’s undulating disease course; however, most patients with HF lack advance directives.<sup>50,51</sup> There is growing acceptance that provision of palliative care should be based on patient need and be given at any point in a patient’s illness, however, the disease trajectory of HF remains a barrier to hospice use by this population.

## Symptom Burden that is Difficult to Manage at Home

Some patients with HF experience more severe symptoms than patients with advanced cancer.<sup>52,53</sup> Dyspnoea, fatigue and pain are particularly problematic and are likely to contribute to the higher

rate of acute medical service use in the last 30 days before death among patients with HF compared with those with cancer.<sup>46,54,56</sup> As a result, patients with HF have higher rates of hospital death compared with patients with other diseases.<sup>57</sup> Depression is also highly prevalent among patients with HF.<sup>58</sup>

The high symptom severity of HF also contributes to caregiver burden. As patients with HF become unable to handle activities of daily living, carers – who are usually family members – provide vital support and care. These activities may include monitoring of wellbeing and changes in health status, supporting adherence to dietary restrictions, managing medication that frequently requires modification, ensuring safety and providing emotional support.<sup>59</sup> As patients decline, carers increasingly provide more hands-on personal care such as dressing and bathing. Relatives and carers of patients with HF report high rates of depression and impaired quality of life.<sup>60,61</sup> Carers often lack clinical knowledge of the condition and its management and many feel unprepared to deal with exacerbations at home.<sup>62–64</sup> According to one Swedish study, nearly one-third of partners of patients with HF reported perceiving a medium level of carer burden.<sup>65</sup> Unpaid carers represent a ‘hidden’ lay palliative care workforce who are vulnerable, underserved and in great need of professional palliative care support.<sup>66</sup>

## Geographic and Socioeconomic Disparities

Social and cultural factors influence how care is used at the end of life. HF is a care-intensive disease and hospice care is unable to be given around the clock. Patients who lack familial carers or the money to pay carers may be less able to remain at home with hospice care. Median income has been inversely associated with lower odds of 30-day hospital readmission, suggesting that financial resources are essential for remaining at home.<sup>67</sup> Multiple studies have found an association between low socioeconomic status and more aggressive medical care at the end of life, increased likelihood of dying in institutional settings and a lower likelihood of receiving hospice services.<sup>68–70</sup>

In many European countries, palliative care is funded through a mix of statutory funding, charities, private insurance and out-of-pocket payments.<sup>71</sup> A high reliance on charitable giving results in a postcode lottery, with available services being determined by where one lives. Inpatient hospices are particularly reliant upon charitable income to cover costs. It is perhaps unsurprising then that inpatient hospice deaths in England are less likely in more deprived areas.<sup>72</sup> Rural patients have poorer access to hospice and hospices in rural areas may be more likely to serve a smaller number of patients and to limit expensive services due to fear of financial risk.<sup>16,73,74</sup>

## Late Referrals to Palliative Care and Hospice

The European Society of Cardiology, American College of Cardiology (ACC) and American Heart Association (AHA) have called for palliative care to be integrated into the care of patients with advanced heart disease, yet patients with HF are often not referred to palliative care.<sup>75,76</sup> A survey of Japanese Circulation Society-authorized cardiology training hospitals found that 42% of institutions had held a palliative care conference for patients with HF, but only 9% held them regularly.<sup>77</sup> Sixty-one percent of surveyed hospitals reported rarely holding them.<sup>78</sup> A study of people who had died in Veterans Affairs health facilities in the US found that less than half of those with cardiopulmonary failure received palliative care consultations.<sup>79</sup> Another study involving 215 patients with either advanced cancer, chronic obstructive pulmonary disease or HF found that when a physician discussed hospice care

there was a strong association with subsequent enrollment, however, only 7% of patients with HF enrolled compared with 46% of patients with cancer.<sup>80</sup> In general, palliative care should be considered from diagnosis onward; however, it may be unwarranted for cardiologists to refer to palliative care specialists in early-stage HF as patients may be asymptomatic or sufficiently cared for with primary palliative care from their HF clinician.<sup>81,82</sup>

Patients with HF who may appear to be near death are often candidates for procedures such as left ventricular assist device or heart transplant. Hospice eligibility is less clear-cut for people with HF and may complicate referrals. Inaccuracy in HF prognostication is another impediment to palliative care and hospice referral. One study of physicians found that fewer than half of physicians accurately estimated survival in patients with HF.<sup>83</sup>

Palliative care needs assessments tools for HF, such as the Needs Assessment Tool: Progressive Disease–Heart Failure (NAT:PD-HF), have been validated and tested internationally.<sup>84,85</sup> Although needs assessment tools may assist in the identification of palliative care needs for people with HF, a recent test of the feasibility of a Dutch NAT:PD-HF suggests that an instrument alone is likely to be unable to facilitate timely recognition of palliative care needs by professionals with limited palliative care training and expertise.<sup>85</sup>

### Professional Factors

Documentation of advance directives has been associated with lower costs, lower risk of in-hospital death, and greater hospice use in regions with higher levels of end of life spending; however, most hospitalised patients with HF do not have documented advance directives.<sup>50,86</sup>

Cardiologists have reported discomfort in discussing end of life care and many differ in their beliefs regarding whose responsibility these conversations are.<sup>87</sup> Physicians also report feeling more uncomfortable discussing palliative care with people with HF than with patients who have lung cancer.<sup>83</sup> Many cardiologists have also reported that time constraints are a barrier to their engagement in ACP.

Advances in therapies and devices for the treatment of HF may complicate the work of hospice providers. Few hospices have training, policies or procedures or standardised care plans for managing patients with HF.<sup>16</sup> Although one-third of Medicare patients with ICDs receive hospice care, most hospices lack protocols for ICD deactivation.<sup>88,89</sup> In a UK study of palliative care professionals, 24% reported experiencing difficulties with ICD deactivation at the end of life and 83% of respondents reported ICD deactivation was seldom discussed by cardiologists before making a palliative care referral.<sup>90</sup> ICDs do not improve symptoms and device discharge or complications may add to patient suffering.<sup>46</sup> In addition to the prohibitive costs of inotropes and other IV drugs, many hospices will not provide IV treatments in the home setting. Hospices may not provide continuous positive airway pressure (CPAP) machines despite the fact that sleep-disordered breathing occurs in at least half of people with advanced HF.<sup>16,91</sup>

Many hospices lack the knowledge and expertise necessary for the management of HF. A study of hospice staff in North and South Carolina in the US found that most staff lacked experience and were uncomfortable when using inotropes, mainly because their hospice did not provide coverage of inotropes.<sup>92</sup> In a focus group of HF palliative

**Table 1: Recommendations to Optimise Hospice Care for Heart Failure**

Increase flexibility in hospice enrollment by prognosis and need: given the difficulty in assessing prognosis, we recommend additional factors to determine hospice eligibility
Early introduction of palliative care for HF patients: efforts to introduce palliative care earlier in the natural course of the disease should be made and tested
Improved advance care planning: advance care planning for people with HF should incorporate features specific to them, such as ICD and LVAD status and inotropes in use
Development of new care and payment models for hospice care: given limitations of current models for HF, new care and payment models should be tested and implemented
Improve training of hospice staff in HF care: to increase comfort and competency, nursing staff should receive HF-specific training
Additional intensive social and medical support at home: people with HF are at high risk of hospital admission, which should be addressed with additional support services at home
Increase research in palliative care in HF: more funding from federal and other sources should be directed towards testing and implementing HF-specific palliative care

HF = heart failure; LVAD = left ventricular assist device.

care specialist nurses in Scotland and England, junior nurses reported their reluctance to accept patients with HF for hospice care and some hospices needed reassurance about their ability to meet the needs of patients with HF.<sup>93</sup>

### Recommendations

#### Improved Advance Care Planning and Earlier Palliative Care Integration

Patients with HF and often their clinicians rarely realise the terminal nature of their disease.<sup>94</sup> Little is known about communication and decision-making between clinicians and patients with HF, yet patient-centered communication is possible and essential.<sup>95</sup> Clinicians must assist patients in developing a realistic assessment of their expected survival throughout the course of the disease that could assist decision-making related to advance care planning (*Table 1*).<sup>96</sup> Given the shortage of palliative care specialists, cardiologists must become proficient in generalist palliative care skills.<sup>97</sup> Experts recommend that palliative care be introduced into HF care by patients' primary clinical teams, followed by palliative care consultation in selected patients.<sup>96</sup>

The ESC recommends that end of life care be considered for people with HF who:

- Have progressive functional decline and dependence in most activities of daily living;
- Experience severe HF symptoms with poor quality of life despite optimal pharmacological and non-pharmacological therapies;
- Have frequent hospital admissions or other serious episodes of decompensation despite optimal treatment;
- Have been ruled out of heart transplantation and mechanical circulatory support;
- Patients experiencing cardiac cachexia; and
- Those clinically judged to be near the end of life.<sup>98</sup>

Creative partnerships and collaboration between teams may be tailored to take advantage of the staffing and resources of particular healthcare systems and facilities. One Canadian institution found that embedding a palliative care team into the HF team resulted

**Table 2: Proposed Metrics to Assess Quality of Hospice Care for Heart Failure**

% of patients with length of stay <1 week
% of patients able to access inotropes or other IV therapies
% of patients with documentation of advance care planning
% of patients readmitted to hospital
Patient and family satisfaction scores
% of cases where ICD and LVAD deactivation had been discussed
Training in HF care for hospice staff
Family surveys of bereavement services

HF = heart failure; LVAD = left ventricular assist device.

in a significant increase in ACP documentation, a decrease in the use of emergency department visits and hospital readmissions, and high patient and family satisfaction.<sup>78</sup> St Luke's Hospice in England partnered with local NHS trusts to improve the management of care for patients with advanced HF. After the adoption of a trigger tool to identify patients who could benefit from palliative care, access to advance care planning and deaths outside the hospital increased.<sup>99</sup>

### Increased Research into Palliative Care and Hospice in Heart Failure

Insufficient funding for palliative care research has contributed to an inadequate evidence base for improving symptom management, communication skills, care coordination, and the development of care models.<sup>100</sup> Less than 0.2% of the annual budget of the National Institutes of Health in the US has been spent on palliative care research.<sup>101,102</sup> After the recognition of palliative care as a medical specialty, there has been an increase in palliative care research, however, a concerted effort to increase the evidence base in this field is needed.<sup>103</sup> Most of the funding for palliative care research has been focused on oncology, resulting in limited funding sources for research into palliative care for people with HF.<sup>104,105</sup> Chart reviews have indicated that only about 10% of patients with HF receive palliative care consultations and these tend to occur in the last month of life.<sup>106</sup> Despite being the leading cause of death in the US, fewer than 19% of Medicare patients who died while receiving hospice care had a cardiac or cardiovascular diagnosis.<sup>18,107</sup> Improving the evidence base is essential for the advancement of specialist palliative care and hospice use in HF.

### Development of New Models of Hospice Care

Innovative home-based programmes for HF management have been shown to reduce hospital readmissions, reduce costs and improve quality of life.<sup>108</sup> It follows that hospice care may better meet the needs of patients with HF were hospice services designed with HP needs in mind. Indeed, research suggests that a hospice model tailored to

the needs of patients with HF might improve enrollment among this population.<sup>14</sup> Particular metrics are needed to assess the quality of hospice care for patients with HF (Table 2).

Hospice staff must also be sufficiently trained to manage the needs of patients with HF. In response to the recognition of unmet palliative and end of life care needs among patients with HF, the British Heart Foundation funded HF nurses to receive training in palliative care and advanced communication skills. An evaluation of the programme indicated that patients and their carers reported improved service quality, better care coordination, reduced anxiety and improved ability to cope with illness and death.<sup>93</sup>

Being willing to forgo life-sustaining treatment does not identify patients with a greater need for hospice services and, therefore, hospice fails a test of fairness.<sup>109</sup> In the US, other Medicare benefits are not subject to cost-based restrictions, rather they are determined by a medical need for diagnosis and treatment of an illness or injury and made through an evidence-based process.<sup>110</sup> Advocates are pushing for a concurrent care model in which patients may receive supportive care services typically provided by a hospice while continuing to receive curative treatment. Hospice criteria based on patient need and functional status should be established.<sup>109,111</sup>

Australia uses a payment model for palliative care based on patient characteristics, with reimbursement determined by the patient's performance status, phase of illness, care setting and age. Similar models are also being explored in England and Switzerland.<sup>71</sup> Cardiology should join palliative care in advocating for the creation of new models of end of life care for patients with HF – including features that meet the unique physical and psychosocial needs of those with HF.

### Conclusion

Underuse of hospice care for people with HF is a significant public health problem. Despite differing social issues and healthcare systems, barriers to hospice use for patients with HF are remarkably similar in high-income countries. The increasing prevalence of HF demands improvements in how we meet the needs of patients nearing the end of life and their carers. With a growing shortage in the palliative care workforce, it is imperative that cardiologists develop comfort and proficiency in ACP and primary palliative care.<sup>112,113</sup> Without patient-centred and disease-specific modifications, it is unlikely that hospice use will increase among patients with HF. Improving communication and developing trust must be priorities in improving end of life care for all. Innovative programmes and models of care may extend the reach of palliative and hospice care in institutions and in more remote geographic areas. Despite the challenges, there are actions we can take to increase hospice use among patients with HF. ■

- Ambrosy AP, Fonarow GC, Butler J, et al. The global health and economic burden of hospitalizations for heart failure: lessons learned from hospitalized heart failure registries. *J Am Coll Cardiol* 2014;63:1123–33. <https://doi.org/10.1016/j.jacc.2013.11.053>; PMID: 24491689.
- Cook C, Cole G, Asaria P, et al. The annual global economic burden of heart failure. *Int J Cardiol* 2014;171:368–76. <https://doi.org/10.1016/j.ijcard.2013.12.028>; PMID: 24398230.
- Journath G, Hammar N, Elofsson S, et al. Time trends in incidence and mortality of acute myocardial infarction, and all-cause mortality following a cardiovascular prevention program in Sweden. *PLoS One* 2015;10:e0140201. <https://doi.org/10.1371/journal.pone.0140201>; PMID: 26580968.
- Roger VL, Weston SA, Redfield MM, et al. Trends in heart failure incidence and survival in a community-based population. *JAMA* 2004;292:344–50. <https://doi.org/10.1001/jama.292.3.344>; PMID: 15265849.
- Mozaffarian D, Benjamin EJ, Go AS, et al. Heart disease and stroke statistics – 2016 update: a report from the American Heart Association. *Circulation* 2016;133:e38–360. <https://doi.org/10.1161/CIR.0000000000000350>; PMID: 26673558.
- Najafi F, Jamrozik K, Dobson AJ. Understanding the 'epidemic of heart failure': a systematic review of trends in determinants of heart failure. *Eur J Heart Fail* 2009;11:472–9. <https://doi.org/10.1093/eurjhf/hfp029>; PMID: 19251729.
- Warraich HJ, Rogers JG. It is time to discuss dying? *JACC Heart Fail* 2018;6:790–1. <https://doi.org/10.1016/j.jchf.2018.05.008>; PMID: 30098971.
- Ohlmeier C, Mikolajczyk R, Frick J, et al. Incidence, prevalence and 1-year all-cause mortality of heart failure in Germany: a study based on electronic healthcare data of more than six million persons. *Clin Res Cardiol* 2015; 104:688–96. <https://doi.org/10.1007/s00392-015-0841-4>; PMID: 25777937.
- Hobbs FD, Kenkre JE, Roalke AK, et al. Impact of heart failure and left ventricular systolic dysfunction on quality of life: a cross-sectional study comparing common chronic cardiac and medical disorders and a representative adult population. *Eur Heart J* 2002;23:1867–76. <https://doi.org/10.1053/euhj.2002.3255>; PMID: 12445536.
- WHO. *Global Atlas of Palliative Care at the End of Life*. Geneva: WHO, 2014.
- Hines AL, Barrett MSH, Jiang J, Steiner CA. Conditions with the largest number of adult hospital readmissions by payer, 2011. Rockville, MD: Agency for Healthcare Research and Quality, 2014.
- Westert GP, Lagoe RJ, Keskimäki I, et al. An international study of hospital readmissions and related utilization in Europe and the USA. *Health Policy* 2002;61:269–78. [https://doi.org/10.1016/S0168-8510\(01\)00236-6](https://doi.org/10.1016/S0168-8510(01)00236-6); PMID: 12098520.
- Chan WX, Lin W, Wong RCC. Transitional care to reduce heart



- failure readmission rates in South East Asia. *Card Fail Rev* 2016;2:85–9. <https://doi.org/10.15420/cfr.2016.9.2>; PMID: 28785458.
14. Gelfman LP, Barrón Y, Moore S, et al. Predictors of hospice enrollment for patients with advanced heart failure and effects on health care use. *JACC Heart Fail* 2018;6:780–9. <https://doi.org/10.1016/j.jchf.2018.04.009>; PMID: 30098966.
  15. Hauptman PJ, Goodlin SJ, Lopatin M, et al. Characteristics of patients hospitalized with acute decompensated heart failure who are referred for hospice care. *Arch Intern Med* 2007;167:1990–7. <https://doi.org/10.1001/archinte.167.18.1990>; PMID: 17923600.
  16. Goodlin SJ, Kutner JS, Connor SR, et al. Hospice care for heart failure patients. *J Pain Symptom Manage* 2005;29:525–8. <https://doi.org/10.1016/j.jpainsymman.2005.03.005>; PMID: 15904755.
  17. Bain KT, Maxwell TL, Strassels SA, Whellan DJ. Hospice use among patients with heart failure. *Am Heart J* 2009;158:118–25. <https://doi.org/10.1016/j.ahj.2009.05.013>; PMID: 19540401.
  18. National Hospice and Palliative Care Organization. Facts and Figures: Hospice Care in America. Alexandria, VA: National Hospice and Palliative Care Organization, 2018.
  19. Obermeyer Z, Makar M, Abujaber S, et al. Association between the Medicare hospice benefit and health care utilization and costs for patients with poor-prognosis cancer. *JAMA* 2014;312:1888–96. <https://doi.org/10.1001/jama.2014.14950>; PMID: 25387186.
  20. Teno JM, Clarridge BR, Casey V, et al. Family perspectives on end-of-life care at the last place of care. *JAMA* 2004;291:88–93. <https://doi.org/10.1001/jama.291.1.88>; PMID: 14709580.
  21. Teno JM, Shu JE, Casarett D, et al. Timing of referral to hospice and quality of care: length of stay and bereaved family members' perceptions of the timing of hospice referral. *J Pain Symptom Manage* 2007;34:120–5. <https://doi.org/10.1016/j.jpainsymman.2007.04.014>; PMID: 17583469.
  22. Kelley AS, Deb P, Du Q, et al. Hospice enrollment saves money for Medicare and improves care quality across a number of different lengths-of-stay. *Health Aff (Millwood)* 2013;32:552–61. <https://doi.org/10.1377/hlthaff.2012.0851>; PMID: 23459735.
  23. Wright AA, Keating NL, Balboni TA, et al. Place of death: correlations with quality of life of patients with cancer and predictors of bereaved caregivers' mental health. *J Clin Oncol* 2010;28:4457–64. <https://doi.org/10.1200/JCO.2009.26.3863>; PMID: 20837950.
  24. Bradley EH, Prigerson H, Carlson MD, et al. Depression among surviving caregivers: does length of hospice enrollment matter? *Am J Psychiatry* 2004;161:2257–62. <https://doi.org/10.1176/appi.ajp.161.12.2257>; PMID: 15569897.
  25. Taylor DH, Ostermann J, Van Houtven CH, et al. What length of hospice use maximizes reduction in medical expenditures near death in the US Medicare program? *Soc Sci Med* 2007;65:1466–78. <https://doi.org/10.1016/j.socscimed.2007.05.028>; PMID: 17600605.
  26. Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med* 2009;360:1418–28. <https://doi.org/10.1056/NEJMs0803563>; PMID: 19339721.
  27. PricewaterhouseCoopers' Health Research Institute. *The Price of Excess: Identifying Waste in Healthcare*. 2008. Available at: [www.oss.net/dynamaster/file\\_archiv/080509/59126a38c114f2295757bb6be522128a/The%20Price%20of%20Excess%20-%20Identifying%20Waste%20in%20Healthcare%20-%20Spending%20-%20PWC.pdf](http://www.oss.net/dynamaster/file_archiv/080509/59126a38c114f2295757bb6be522128a/The%20Price%20of%20Excess%20-%20Identifying%20Waste%20in%20Healthcare%20-%20Spending%20-%20PWC.pdf) (accessed 3 April 2019).
  28. Lenzen MJ, Scholte op Reimer WJ, Boersma E, et al. Differences between patients with a preserved and a depressed left ventricular function: a report from the EuroHeart Failure Survey. *Eur Heart J* 2004;25:1214–20. <https://doi.org/10.1016/j.ehj.2004.06.006>; PMID: 15246639.
  29. Albuquerque DC, Neto JD, Bacal F, et al. I Brazilian registry of heart failure – clinical aspects, care quality and hospitalization outcomes. *Arq Bras Cardiol* 2015;104:433–42. <https://doi.org/10.5935/abc.20150031>; PMID: 26131698.
  30. Stafylas P, Farmakis D, Kourlaba G, et al. The heart failure pandemic: The clinical and economic burden in Greece. *Int J Cardiol* 2017;227:923–9. <https://doi.org/10.1016/j.ijcard.2016.10.042>; PMID: 27915082.
  31. Kheirbek RE, Fletcher RD, Bakitas MA, et al. Discharge hospice referral and lower 30-day all-cause readmission in Medicare beneficiaries hospitalized for heart failure. *Circ Heart Fail* 2015;8:733–40. <https://doi.org/10.1161/CIRCHEARTFAILURE.115.002153>; PMID: 26019151.
  32. Shnoor Y, Szaifer M, Aoberman AS, Bentur N. The cost of home hospice care for terminal patients in Israel. *Am J Hosp Palliat Care* 2007;24:284–90. <https://doi.org/10.1177/1049909107300212>; PMID: 17601831.
  33. National Council for Palliative Care. *National Survey of Patient Activity Data for Specialist Palliative Care Services. Minimum Data Set: Full Report for The Year 2014–15*. 2016. Available at: <http://www.nccp.org.uk/sites/default/files/user/documents/MergedMDSinWord.pdf> (accessed on 3 April 2019).
  34. Warraich HJ, Xu H, DeVore AD, et al. Trends in hospice discharge and relative outcomes among Medicare patients in the get with the guidelines-heart failure registry. *JAMA Cardiol* 2018;3:917–26. <https://doi.org/10.1001/jamacardio.2018.2678>; PMID: 30167645.
  35. Cheung WY, Schaefer K, May CW, et al. Enrollment and events of hospice patients with heart failure vs. cancer. *J Pain Symptom Manage* 2013;45:552–60. <https://doi.org/10.1016/j.jpainsymman.2012.03.006>; PMID: 22940560.
  36. Yim CK, Barrón Y, Moore S, et al. Hospice enrollment in patients with advanced heart failure decreases acute medical service utilization. *Circ Heart Fail* 2017;10:e003335. <https://doi.org/10.1161/CIRCHEARTFAILURE.116.003335>; PMID: 28292824.
  37. Unroe KT, Greiner MA, Hernandez AF, et al. Resource use in the last 6 months of life among Medicare beneficiaries with heart failure, 2000–2007. *Arch Intern Med* 2011;171:196–203; <https://doi.org/10.1001/archinternmed.2010.371>; PMID: 20937916.
  38. Miceli PJ, Mylod DE. Satisfaction of families using end-of-life care: current successes and challenges in the hospice industry. *Am J Hosp Palliat Care* 2003;20:360–70. <https://doi.org/10.1177/104990910302000510>; PMID: 14529039.
  39. Schockett ER, Teno JM, Miller SC, Stuart B. Late referral to hospice and bereaved family member perception of quality of end-of-life care. *J Pain Symptom Manage* 2005;30:400–7. <https://doi.org/10.1016/j.jpainsymman.2005.04.013>; PMID: 16310614.
  40. Rickerson E, Harrold J, Kapo J, et al. Timing of hospice referral and families' perceptions of services: are earlier hospice referrals better? *J Am Geriatr Soc* 2005;53:819–23. <https://doi.org/10.1111/j.1532-5415.2005.53259.x>; PMID: 15877557.
  41. Miller SC, Weitzen S, Kinzbrunner B. Factors associated with the high prevalence of short hospice stays. *J Palliat Med* 2003;6:725–36. <https://doi.org/10.1089/109662103322515239>; PMID: 14622452.
  42. Pritchard RS, Fisher ES, Teno JM, et al. Influence of patient preferences and local health system characteristics on the place of death. SUPPORT Investigators. Study to Understand Prognoses and Preferences for Risks and Outcomes of Treatment. *J Am Geriatr Soc* 1998;46:1242–50. <https://doi.org/10.1111/j.1532-5415.1998.tb04540.x>; PMID: 9777906.
  43. Lunney JR, Lynn J, Hogan C. Profiles of older medicare decedents. *J Am Geriatr Soc* 2002;50:1108–12. <https://doi.org/10.1046/j.1532-5415.2002.50268.x>; PMID: 12110073.
  44. Lunney JR, Lynn J, Foley DJ, et al. Patterns of functional decline at the end of life. *JAMA* 2003;289:2387–92. <https://doi.org/10.1001/jama.289.18.2387>; PMID: 12746362.
  45. Goldstein NE, Lynn J. Trajectory of end-stage heart failure: the influence of technology and implications for policy change. *Perspect Biol Med* 2006;49:10–8. <https://doi.org/10.1353/pbm.2006.0008>; PMID: 16489273.
  46. Lemond L, Allen LA. Palliative care and hospice in advanced heart failure. *Prog Cardiovasc Dis* 2011;54:168–78. <https://doi.org/10.1016/j.pcard.2011.03.012>; PMID: 21875515.
  47. Weeks JC, Cook EF, O'Day SJ, et al. Relationship between cancer patients' predictions of prognosis and their treatment preferences. *JAMA* 1998;279:1709–14. <https://doi.org/10.1001/jama.279.21.1709>; PMID: 9624023.
  48. Vig EK, Starks H, Taylor JS, et al. Why don't patients enroll in hospice? Can we do anything about it? *J Gen Intern Med* 2010;25:1009–19. <https://doi.org/10.1007/s11606-010-1423-9>; PMID: 20535577.
  49. Waldrop DV, Meeker MA. Hospice decision making: diagnosis makes a difference. *Gerontologist*. 2012;52:686–97. <https://doi.org/10.1093/geront/gnr160>; PMID: 22387234.
  50. Butler J, Binney Z, Kalogeropoulos A, et al. Advance directives among hospitalized patients with heart failure. *JACC Heart Fail* 2015;3:112–21. <https://doi.org/10.1016/j.jchf.2014.07.016>; PMID: 25543976.
  51. Bischoff KE, Sudore R, Miao Y, et al. Advance care planning and the quality of end-of-life care in older adults. *J Am Geriatr Soc* 2013;61:209–14. <https://doi.org/10.1111/jgs.12105>; PMID: 23350921.
  52. Xu J, Nolan MT, Heinke K, et al. Symptom frequency, severity, and quality of life among persons with three disease trajectories: cancer, ALS, and CHF. *Appl Nurs Res* 2015;28:311–5. <https://doi.org/10.1016/j.apnr.2015.03.005>; PMID: 26608431.
  53. Kavalieratos D, Kamal AH, Abernethy AP, et al. Comparing unmet needs between community-based palliative care patients with heart failure and patients with cancer. *J Palliat Med* 2014;17:475–81. <https://doi.org/10.1089/jpm.2013.0526>; PMID: 24588568.
  54. Setoguchi S, Glynn RJ, Stedman M, et al. Hospice, opiates, and acute care service use among the elderly before death from heart failure or cancer. *Am Heart J* 2010;160:139–44. <https://doi.org/10.1016/j.ahj.2010.03.038>; PMID: 20598984.
  55. Goebel JR, Doering LV, Shugarman LR, et al. Heart failure: the hidden problem of pain. *J Pain Symptom Manage* 2009;38:698–707. <https://doi.org/10.1016/j.jpainsymman.2009.04.022>; PMID: 19733032.
  56. Yancy CW, Jessup M, Bozkurt B, et al. 2017 ACC/AHA/HFSA Focused Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Failure Society of America. *J Am Coll Cardiol* 2017;70:776–803. <https://doi.org/10.1016/j.jacc.2017.04.025>; PMID: 28461007.
  57. Warraich HJ, Hernandez AF, Allen LA. How medicine has changed the end of life for patients with cardiovascular disease. *J Am Coll Cardiol* 2017;70:1276–89. <https://doi.org/10.1016/j.jacc.2017.07.735>; PMID: 28859792.
  58. Rutledge T, Reis VA, Linke SE, et al. Depression in heart failure: a meta-analytic review of prevalence, intervention effects, and associations with clinical outcomes. *J Am Coll Cardiol* 2006;48:1527–37. <https://doi.org/10.1016/j.jacc.2006.06.055>; PMID: 17045884.
  59. Wingham J, Frost J, Britten N, et al. Needs of caregivers in heart failure management: a qualitative study. *Chronic Illn* 2015;11:304–19. <https://doi.org/10.1177/1742395315547465>; PMID: 25795144.
  60. Mårtensson J, Dracup K, Canary C, Fridlund B. Living with heart failure: depression and quality of life in patients and spouses. *J Heart Lung Transplant* 2003;22:460–7. [https://doi.org/10.1016/S1053-2498\(02\)00818-5](https://doi.org/10.1016/S1053-2498(02)00818-5); PMID: 12681424.
  61. Bakas T, Pressler SJ, Johnson EA, et al. Family caregiving in heart failure. *Nurs Res* 2006;55:180–8. <https://doi.org/10.1097/00006199-200605000-00004>; PMID: 16708042.
  62. Clark AM, Reid ME, Morrison CE, et al. The complex nature of informal care in home-based heart failure management. *J Adv Nurs* 2008;61:373–83. <https://doi.org/10.1111/j.1365-2648.2007.04527.x>; PMID: 18234035.
  63. Walden JA, Dracup K, Westlake C, et al. Educational needs of patients with advanced heart failure and their caregivers. *J Heart Lung Transplant* 2001;20:766–9. [https://doi.org/10.1016/S1053-2498\(00\)0239-4](https://doi.org/10.1016/S1053-2498(00)0239-4); PMID: 11448807.
  64. Gysels MH, Higginson IJ. Caring for a person in advanced illness and suffering from breathlessness at home: threats and resources. *Palliat Support Care* 2009;7:153–62. <https://doi.org/10.1017/S1478951509000200>; PMID: 19538797.
  65. Agren S, Evangelista L, Strömberg A. Do partners of patients with chronic heart failure experience caregiver burden? *Eur J Cardiovasc Nurs* 2010;9:254–62. <https://doi.org/10.1016/j.ejcnurse.2010.03.001>; PMID: 20598946.
  66. Nicholas Dionne-Odom J, Hooker SA, Bekelman D, et al. Family caregiving for persons with heart failure at the intersection of heart failure and palliative care: a state-of-the-science review. *Heart Fail Rev* 2017;22:543–7. <https://doi.org/10.1007/s10741-017-9597-4>; PMID: 28160116.
  67. Eapen ZJ, McCoy LA, Fonarow GC, et al. Utility of socioeconomic status in predicting 30-day outcomes after heart failure hospitalization. *Circ Heart Fail* 2015;8:473–80. <https://doi.org/10.1161/CIRCHEARTFAILURE.114.001879>; PMID: 25747700.
  68. Chang CM, Wu CC, Yin WY, et al. Low socioeconomic status is associated with more aggressive end-of-life care for working-age terminal cancer patients. *Oncologist* 2014;19:1241–8. <https://doi.org/10.1634/theoncologist.2014-0152>; PMID: 25342317.
  69. Barclay JS, Kuchibhatla M, Tulsky JA, Johnson KS. Association of hospice patients' income and care level with place of death. *JAMA Intern Med* 2013;173:450–6. <https://doi.org/10.1001/jamainternmed.2013.2773>; PMID: 23420383.
  70. Hardy D, Chan W, Liu CC, et al. Racial disparities in length of stay in hospice care by tumor stage in a large elderly cohort with non-small cell lung cancer. *Palliat Med* 2012;26:61–71. <https://doi.org/10.1177/0269216311407693>; PMID: 21606129.
  71. Groeneveld EJ, Cassel JB, Bausewein C, et al. Funding models in palliative care: lessons from international experience. *Palliat Med* 2017;31:296–305. <https://doi.org/10.1177/0269216316689015>; PMID: 28156188.
  72. Sleeman KE, Davies JM, Verne J, et al. The changing demographics of inpatient hospice death: Population-based cross-sectional study in England, 1993–2012. *Palliat Med* 2016;30:45–53. <https://doi.org/10.1177/0269216315585064>; PMID: 25997129.
  73. Teno JM, Plotzke M, Christian T, Gozalo P. Examining variation in hospice visits by professional staff in the last 2 days of life. *JAMA Intern Med* 2016;176:364–70. <https://doi.org/10.1001/jamainternmed.2015.7479>; PMID: 26857275.
  74. Lueckmann SL, Behrman M, Bisson S, Schneider N. 'Good idea but not feasible' – the views of decision makers and stakeholders towards strategies for better palliative care in Germany: a representative survey. *BMC Palliat Care* 2009;8:10. <https://doi.org/10.1186/1472-684X-8-10>; PMID: 19622177.
  75. Jessup M, Abraham WT, Casey DE, et al. 2009 Focused update: ACCF/AHA Guidelines for the Diagnosis and Management of Heart Failure in Adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines: developed in collaboration with the International Society for Heart and Lung Transplantation. *Circulation* 2009;119:1977–2016. <https://doi.org/10.1161/CIRCULATIONAHA.109.192064>; PMID: 19324967.
  76. Hunt SA, Abraham WT, Chin MH, et al. 2009 Focused update incorporated into the ACC/AHA 2005 Guidelines for the Diagnosis and Management of Heart Failure in Adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines Developed in Collaboration With the International Society for Heart and Lung Transplantation. *J Am Coll Cardiol* 2009;53:e1–e90. <https://doi.org/10.1016/j.jacc.2008.11.013>; PMID: 19358937.
  77. Kuragaichi T, Kurozumi Y, Ohishi S, et al. Nationwide survey of palliative care for patients with heart failure in Japan. *Circ J* 2018;82:1336–43. <https://doi.org/10.1253/circj.CJ-17-1305>; PMID: 29526984.
  78. Lewin WH, Cheung W, Horvath AN, et al. Supportive cardiology: moving palliative care upstream for patients living with advanced heart failure. *J Palliat Med* 2017;20:1112–9. <https://doi.org/10.1089/jpm.2016.0317>; PMID: 28472598.
  79. Wachtman MW, Pliver C, Smith D, et al. Quality of end-of-life care provided to patients with different serious illnesses. *JAMA Intern Med* 2016;176:1095–102. <https://doi.org/10.1001/jamainternmed.2016.1200>; PMID: 27367547.
  80. Thomas JM, O'Leary JR, Fried TR. Understanding their options: determinants of hospice discussion for older persons with advanced illness. *J Gen Intern Med* 2009;24:923–8. <https://doi.org/10.1007/s11606-009-1030-9>; PMID: 19506972.

81. World Health Organization. Strengthening of palliative care as a component of integrated treatment throughout the life course. *J Pain Palliat Care Pharmacother* 2014;28:130–4. <https://doi.org/10.3109/15360288.2014.911801>; PMID: 24779434.
82. Gelfman LP, Kalman J, Goldstein NE. Engaging heart failure clinicians to increase palliative care referrals: overcoming barriers, improving techniques. *J Palliat Med* 2014;17:753–60. <https://doi.org/10.1089/jpm.2013.0675>; PMID: 24901674.
83. Warraich HJ, Allen LA, Mukamal KJ, et al. Accuracy of physician prognosis in heart failure and lung cancer: Comparison between physician estimates and model predicted survival. *Palliat Med* 2016;30:684–9. <https://doi.org/10.1177/0269216315626048>; PMID: 26769732.
84. Waller A, Girgis A, Davidson PM, et al. Facilitating needs-based support and palliative care for people with chronic heart failure: preliminary evidence for the acceptability, inter-rater reliability, and validity of a needs assessment tool. *J Pain Symptom Manage* 2013;45:912–25. <https://doi.org/10.1016/j.jpainsymman.2012.05.009>; PMID: 23017612.
85. Janssen DJ, Boyne J, Currow DC, et al. Timely recognition of palliative care needs of patients with advanced chronic heart failure: a pilot study of a Dutch translation of the Needs Assessment Tool: Progressive Disease – Heart Failure (NAT-PD-HF). *Eur J Cardiovasc Nurs* 2019;14:74515119831510. <https://doi.org/10.1177/1474515119831510>; PMID: 30760021.
86. Nicholas LH, Langa KM, Iwashyna TJ, Weir DR. Regional variation in the association between advance directives and end-of-life Medicare expenditures. *JAMA* 2011;306:1447–53. <https://doi.org/10.1001/jama.2011.1410>; PMID: 21972306.
87. Dunlay SM, Foxen JL, Cole T, et al. A survey of clinician attitudes and self-reported practices regarding end-of-life care in heart failure. *Palliat Med* 2015;29:260–7. <https://doi.org/10.1177/0269216314556565>; PMID: 25488909.
88. Kramer DB, Reynolds MR, Normand SL, et al. Hospice use following implantable cardioverter-defibrillator implantation in older patients: results from the national cardiovascular data registry. *Circulation* 2016;133:2030–7. <https://doi.org/10.1161/CIRCULATIONAHA.115.020677>; PMID: 27016104.
89. Goldstein N, Carlson M, Livote E, Kutner JS. Brief communication: management of implantable cardioverter-defibrillators in hospice: A nationwide survey. *Ann Intern Med* 2010;152:296–9. <https://doi.org/10.7326/0003-4819-152-5-201003020-00007>; PMID: 20194235.
90. Cheang MH, Rose G, Cheung CC, Thomas M. Current challenges in palliative care provision for heart failure in the UK: a survey on the perspectives of palliative care professionals. *Open Heart* 2015;2:e000188; <https://doi.org/10.1136/openhrt-2014-000188>; PMID: 25628893.
91. Köhnlein T, Welte T, Tan LB, Elliott MW. Central sleep apnoea syndrome in patients with chronic heart disease: a critical review of the current literature. *Thorax* 2002;57:547–54. <https://doi.org/10.1136/thorax.57.6.547>; PMID: 12037232.
92. Warraich HJ, Taylor DH Jr, Casarett DJ, et al. Hospice care for heart failure: challenges faced by hospice staff in a predominantly rural setting. *J Palliat Med* 2019;21:7–8. <https://doi.org/10.1089/jpm.2018.0454>; PMID: 30633700.
93. Rogers A. *Role of the British Heart Foundation heart failure palliative care specialist nurse: A retrospective evaluation*. London: British Heart Foundation, 2010. Available at: <https://www.bhf.org.uk/informationsupport/publications/about-bhf/z812-role-of-the-bhf-heart-failure-palliative-care-specialist-nurse---a-retrospective-evaluation> (accessed 3 April 2019).
94. Browne S, Macdonald S, May CR, et al. Patient, carer and professional perspectives on barriers and facilitators to quality care in advanced heart failure. *PLoS One* 2014;9:e93288. <https://doi.org/10.1371/journal.pone.0093288>; PMID: 24676421.
95. Goodlin SJ, Quill TE, Arnold RM. Communication and decision-making about prognosis in heart failure care. *J Card Fail* 2008;14:106–13. <https://doi.org/10.1016/j.cardfail.2007.10.022>; PMID: 18325456.
96. Warraich HJ, Rogers JG, Dunlay SM, et al. Top ten tips for palliative care clinicians caring for heart failure patients. *J Palliat Med* 2018;21:1646–50. <https://doi.org/10.1089/jpm.2018.0453>; PMID: 30311835.
97. Quill TE, Abernethy AP. Generalist plus specialist palliative care – creating a more sustainable model. *N Engl J Med* 2013;368:1173–5. <https://doi.org/10.1056/NEJMp1215620>; PMID: 23465068.
98. Ponikowski P, Voors AA, Anker SD, et al. 2016 ESC Guidelines for the Diagnosis and Treatment of Acute and Chronic Heart Failure. *Rev Esp Cardiol (Engl Ed)* 2016;69:1167. <https://doi.org/10.1016/j.rec.2016.11.005>; PMID: 27894487.
99. London: Hospice UK, 2017. Available at [https://www.hospiceuk.org/docs/default-source/What-We-Offer/Care-Support-Programmes/heart-failure-and-hospice-care\\_web.pdf?sfvrsn=2](https://www.hospiceuk.org/docs/default-source/What-We-Offer/Care-Support-Programmes/heart-failure-and-hospice-care_web.pdf?sfvrsn=2) (accessed 4 April 2019).
100. Meier DE, Back AL, Berman A, et al. A national strategy for palliative care. *Health Aff (Millwood)* 2017;36:1265–73. <https://doi.org/10.1377/hlthaff.2017.0164>; PMID: 28679814.
101. Gelfman LP, Morrison RS. Research funding for palliative medicine. *J Palliat Med* 2008;11:36–43. <https://doi.org/10.1089/jpm.2006.0231>; PMID: 18370891.
102. Gelfman LP, Du Q, Morrison RS. An update: NIH research funding for palliative medicine 2006 to 2010. *J Palliat Med* 2013;16:125–9. <https://doi.org/10.1089/jpm.2012.0427>; PMID: 23336358.
103. Abernethy AP, Aziz NM, Basch E, et al. A strategy to advance the evidence base in palliative medicine: formation of a palliative care research cooperative group. *J Palliat Med* 2010;13:1407–13. <https://doi.org/10.1089/jpm.2010.0261>; PMID: 21105763.
104. Teuteberg J, WG T. *Palliative Care for Patients with Heart Failure*. 2016. Available at: <https://www.acc.org/latest-in-cardiology/articles/2016/02/11/08/02/palliative-care-for-patients-with-heart-failure>. (accessed 3 April 2019)
105. Xie K, Gelfman L, Horton JR, Goldstein NE. State of research on palliative care in heart failure as evidenced by published literature, conference proceedings, and NIH funding. *J Card Fail* 2017;23:197–200. <https://doi.org/10.1016/j.cardfail.2016.10.013>; PMID: 27989871.
106. Bakitas M, Macmartin M, Trzepkowski K, et al. Palliative care consultations for heart failure patients: how many, when, and why? *J Card Fail* 2013;19:193–201. <https://doi.org/10.1016/j.cardfail.2013.01.011>; PMID: 23482081.
107. Heron M. *Deaths: Leading Causes for 2016*. Hyattsville, MD: National Center for Health Statistics, 2018.
108. Rich MW, Beckham V, Wittenberg C, et al. A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. *N Engl J Med* 1995;333:1190–5. <https://doi.org/10.1056/NEJM199511023331806>; PMID: 7565975.
109. Fishman J, O'Dwyer P, Lu HL, et al. Race, treatment preferences, and hospice enrollment: eligibility criteria may exclude patients with the greatest needs for care. *Cancer* 2009;115:689–97. <https://doi.org/10.1002/cncr.24046>; PMID: 19107761.
110. Centers for Medicare and Medicaid Services. *Medicare Coverage Determination Process*. Available at: <https://www.cms.gov/Medicare/Coverage/DeterminationProcess/index.html> (accessed 3 April 2019)
111. US Centers for Medicare & Medicaid Services. Medicare Care Choices Model Enables Concurrent Palliative and Curative Care. *J Pain Palliat Care Pharmacother* 2015;29:401–403. <https://doi.org/10.3109/15360288.2015.1103358>; PMID: 26654414.
112. Kamal AH, Bull JH, Swetz KM, et al. Future of the palliative care workforce: preview to an impending crisis. *Am J Med* 2017;130:113–4. <https://doi.org/10.1016/j.amjmed.2016.08.046>; PMID: 27687068.
113. Institute of Medicine. *Dying in America: Improving Quality and Honoring Individual Preferences Near the End of Life*. Washington, DC: National Academies Press, 2015. <https://doi.org/10.17226/18748>.