Failure to function: a report on acute heart failure

Acute heart failure is the most common reason for emergency admission in patients aged 65 years or older, accounting for 5% of all emergency admissions (National Institute for Health and Care Excellence, 2014). There have been major advances in chronic heart failure management including drug treatment, device therapy and improved models of care. However, the management of acute heart failure has remained largely unchanged over the last 25 years. Current guidance includes recommendations about pathways of care, specialist review and follow up as well as investigations and treatment (National Institute for Health and Care Excellence, 2014, 2018).

Patients with heart failure who are aged 75 years or older have an in-hospital mortality rate of 9.4% and care delivered in a specialist cardiology ward is associated with a 40% lower mortality rate (National Institute for Cardiovascular Outcomes Research, 2018). However, there is variation in the age of patients transferred to cardiology wards (42% of patients ≥75 years *vs* 63% of those aged <75 years) (National Institute for Cardiovascular Outcomes Research, 2015). It was therefore timely that the National Confidential Enquiry into Patient Outcome and Death undertook a study to review the organization of heart failure services and clinical care for patients with acute heart failure (Juniper et al, 2018).

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Method

The study population comprised patients aged 16 years or over who were admitted to hospital as an emergency between 1 January and 31 December 2016 inclusive, with a primary diagnosis of heart failure and who died during that admission. A subpopulation of patients who died within 7 days was selected for review. NHS hospitals in the UK, to which patients could be admitted as an emergency, participated. A clinical questionnaire was disseminated to the consultant who was responsible for the care of the patient at the time of death. An organizational questionnaire was sent to hospitals for health-care professionals to complete. Copies of case note extracts were requested for multidisciplinary peer review.

Three scales were used to describe patients' functional status. The New York Heart Association (NYHA) classification outlines four stages of heart failure (The Criteria Committee of the New York Heart Association, 1994). The Rockwood Clinical Frailty Scale is a commonly-used assessment of frailty in older patients (Rockwood et al, 2005). The Karnofsky Performance Status scale is used to record the level of physical functioning in cancer patients (Karnofsky et al, 1948). It is useful in heart failure and is helpful in identifying patients for whom palliative care input would be valuable.

Results

Of the 4768 patients identified by clinical coding, a random sample of 980 was selected for analysis. Of these, 603 clinical questionnaires were returned as well as 464 sets of case notes. The average age of the peer reviewed patient group was 82.7 years (male 80.1 years, female 85.2 years) with slightly more men (246/464, 53%). Comorbidities included moderate or severe renal disease (173/464, 37.3%), diabetes (158/464, 34.1%), previous myocardial infarction (140/464, 30.2%) or chronic obstructive pulmonary disease (121/464, 26.1%). Noticeably 33.9% (195/576) of patients were classified as NYHA IV (severe limitations, experiences symptoms even while at rest, mostly bedbound) and 71.6% (328/458) had a Rockwood score of at least moderately frail. Furthermore, 33.5% (155/463) of patients had a Karnofsky score of 10% (moribund, fatal processes progressing rapidly) suggesting imminent death or 20% (very sick, hospital admission and active supportive treatment necessary).

Report recommendations

Fifteen recommendations were made, of which five were principal recommendations (*Table 1;* full version at www.bjhm.co.uk).

Specialist review

This study reinforced the value of specialist input. The care of patients reviewed by a specialist was rated as 'good' in 53.8% (182/338) but decreased to 12.4% (13/105) where no specialist review occurred. Only a third (199/603, 33%) of patients were reviewed by a member of a specialist heart failure team during admission. Better access to heart failure specialists is clearly required.

Patients should be reviewed by a consultant within 14 hours of admission (or sooner if clinical need dictates). The reviewers deemed the timing of first consultant review as not appropriate in 17.1% (72/421) of patients. Of 162 patients who were reviewed by a cardiologist, 61 (37.7%) were reviewed within 12 hours. This shows that it is possible to organize care such that review takes place within an appropriate timeframe. There were 102 (63%) within 24 hours and 136 (84%) within 48 hours. Cardiologist review resulted in treatment changes in 90/134 (67.2%) of patients. Local guidelines should include standards for specialist review, and service performance should be assessed against these standards.

Investigations

Resources are available to guide the care of acute heart failure but the report findings suggested that faster and more accurate diagnosis was required. Abnormal serum natriuretic peptide levels can highlight the need for echocardiography. Guidelines recommend the measurement of serum natriuretic peptide

Table 1. Principal recommendations

A guideline for the clinical management of acute heart failure should be available in all hospitals	
All heart failure patients should have access to a heart failure multidisciplinary team – core members of which should include a clinician with a sub-speciality interest in heart failure, a specialist heart failure nurse, a health-care professional with expertise in specialist prescribing for heart failure, the primary care team and a specialist in palliative care	
Serum natriuretic peptide measurement should be included in the first set of blood tests in all patients with acute breathlessness and who may have new acute heart failure	
An echocardiogram should be performed for all patients with suspected acute heart failure as early as possible after presentation to hospital, and within a maximum of 48 hours	
For all patients with heart failure, best practice in escalation decision making includes:	■ Assessment of the goals and benefits of treatment escalation ■ Inclusion of the patient (and their family where possible) ■ Involvement of the cardiology or heart failure consultant ■ Agreement among members of the multidisciplinary team ■ Communication of the decision with health-care professionals across the whole care pathway

levels, and 84.2% (144/171) of hospitals reported having a service to undertake this test. Despite this, the blood test was performed in only 19.9% (17/95) of patients who had a new diagnosis of acute heart failure.

Echocardiography is an essential part of the assessment of patients with acute heart failure. It is needed to make an accurate diagnosis, to assess prognosis and to guide specific treatment. Over half (53/95, 55.8%) of the newly diagnosed patients did not have this key investigation done. Local guidelines should also include standards for investigation.

Treatment escalation and palliative care

In advanced heart failure, proactive discussion about treatment escalation and early involvement of palliative care services can improve the experience of patients and their families. When escalation was required, the biggest group of patients was transferred to the coronary care unit, where care is generally provided by cardiologists. This emphasizes the importance of cardiology input for these patients, in particular when they require escalation. Palliative care teams can help with assessment and control of symptoms while providing support. A quarter (118/464, 25.4%) of patients were referred to or discussed with the palliative care team. There were 121/335 (36.1%) patients where discussion would have been appropriate.

Overall quality of care

The importance of the clinical assessment of newly-diagnosed patients with measurement of serum natriuretic peptide levels and echocardiography was highlighted. The overall quality of care delivered to patients was rated using five categories: good (the standard of care that the reviewers would expect for their own patients), room for clinical improvement, room for organizational improvement, room for both clinical and organizational improvement, and less than satisfactory. For those newly diagnosed with heart failure, care was rated as good in 39.8% of patients, increasing to 46.6% for patients with a previous diagnosis of heart failure. There was room for improvement in clinical care in 53% of newly-diagnosed patients which decreased to 39.5% for patients with a previous diagnosis of heart failure.

Conclusions

Focussing on the quality of both clinical and organizational aspects of care will improve the in-hospital experience of patients and potentially improve outcomes including extending their survival. There is an opportunity to organize services to ensure that patients are cared for by specialists, and investigated appropriately to ensure an accurate diagnosis and that appropriate treatment is given. Palliative care services should be proactively involved when appropriate. **BJHM**

KEY POINTS

- Acute heart failure is the most common reason for emergency admission in patients aged 65 years or older, with an in-hospital mortality rate of 9.4%.
- Care delivered in a specialist cardiology ward is associated with a 40% lower mortality rate.
- The NCEPOD report findings indicated that there are resources to guide the care of acute heart failure but faster and more accurate diagnosis was required.
- Patients admitted with acute heart failure should be reviewed by a consultant within 14 hours (or sooner as the clinical need dictates) and by the heart failure multidisciplinary team which all hospitals should have.
- Serum natriuretic peptide levels should be measured in the first set of blood tests in all patients with acute breathlessness and who may have new acute heart failure.
- An echocardiogram should be performed for all patients with suspected acute heart failure as early as possible after presentation to hospital and within a maximum of 48 hours.
- Discussion should include palliative care needs for those with worsening symptoms despite optimal treatment.

Juniper MC, Smith NCE, Koomson D, Protopapa KL, Mason M. 2018. Failure to Function: A review of the care received by patients who died in hospital following an admission with acute heart failure. (accessed 7 March 2019) https://www.ncepod.org.uk/2018ahf.html

Karnofsky DA, Abelmann WH, Craver LF, Burchenal JH. The use of the nitrogen mustards in the palliative treatment of carcinoma – with particular reference to bronchogenic carcinoma. Cancer. 1948 1(4):634-656. https://doi.org/10.1002/1097-0142(194811)1:4<634::AID-CNCR2820010410>3.0.CO;2-L

National Institute for Cardiovascular Outcomes Research. 2015. National Heart Failure Audit Report: April 2013-March 2014. (accessed 7 March 2019) https://www.nicor.org.uk/national-cardiac-audit-programme/heart-failure-heart-failure-audit/

National Institute for Cardiovascular Outcomes Research. 2018. National Heart Failure Audit 2016/17 Summary Report. (accessed 7 March 2019) https://www.nicor.org.uk/national-cardiac-audit-programme/heart-failure-heart-failure-audit/

National Institute for Health and Care Excellence. 2014. Acute heart failure: diagnosis and management. Clinical guideline [CG187]. (accessed 7 March 2019) https://www.nice.org.uk/guidance/cg187

National Institute for Health and Care Excellence. 2018. Chronic heart failure in adults: diagnosis and management. Clinical guideline [NG106]. (accessed 7 March 2019) https://www.nice.org.uk/guidance/ng106

Rockwood K, Song X, MacKnight C, Bergman H, Hogan DB, McDowell I, Mitnitski A. A global clinical measure of fitness and frailty in elderly people. CMAJ. 2005 173(5):489–495. https://doi.org/10.1503/cmaj.050051

The Criteria Committee of the New York Heart Association. 1994. Nomenclature and Criteria for Diagnosis of Diseases of the Heart and Great Vessels. 9th edn. Boston: Little, Brown & Co: 253–256.

Table 1. Principal recommendations

A guideline for the clinical management of acute heart failure should be available in all hospitals. These guidelines should include standards for:

- The location of care – which should be on a specialist unit
- Arrangements for heart failure service review within 24 hours
- Initial investigations required to diagnose acute heart failure, including a standard protocol for the use of BNP/NTproBNP testing and echocardiography
- Immediate treatments (medications guidance for treatment before specialist review)

Hospitals should audit against these standards annually. (Medical directors, directors of nursing, clinical directors.) This recommendation supports NICE guideline CG187. This recommendation refers to the specialist heart failure/cardiology team review – see also recommendation in the report regarding all acute admissions and consultant review within 14 hours of admission

All heart failure patients should have access to a heart failure multidisciplinary team. Core membership of this team should include:

- A clinician with a sub-speciality interest in heart failure
- A specialist heart failure nurse
- A health-care professional with expertise in specialist prescribing for heart failure
- The primary care team
- A specialist in palliative care

Other services such as cardiac rehabilitation, physiotherapy, occupational therapy, clinical psychology, elderly care, dietetics and clerical support should be involved as needed. (Commissioners, medical directors, directors of nursing and clinical directors.) This recommendation supports the draft NICE guidelines for chronic heart failure management outlining the core membership with the addition of palliative care to the core group.

Serum natriuretic peptide measurement should be included in the first set of blood tests in all patients with acute breathlessness and who may have new acute heart failure. It is central to the assessment of these patients to guide further investigation. (All clinicians.) This recommendation supports NICE guideline CG187 rec 1.2.2

An echocardiogram should be performed for all patients with suspected acute heart failure as early as possible after presentation to hospital, and within a maximum of 48 hours as it is the key to diagnosis, risk stratification and specialist management of acute heart failure. (All clinicians, lead physiologists and medical directors.) This recommendation supports NICE guideline CG187 rec 1.2.4

For all patients with heart failure, best practice in escalation decision making includes:

- Assessment of the goals and benefits of treatment escalation
- Inclusion of the patient (and the family where possible)
- Involvement of the cardiology or heart failure consultant
- Agreement among members of the multidisciplinary team
- Communication of the decision with health-care professionals across the whole care pathway

For patients with advanced heart failure, pre-emptive discussion in the outpatient setting of treatments that would not be beneficial, along with consideration of palliative care needs, can prevent unnecessary admissions and should be encouraged. Escalation decisions should be reviewed at the time of all admissions with acute heart failure. (Heart failure teams/consultant cardiologists.)
See also General Medical Council (2010) Treatment and care towards the end of life: good practice in decision making. (accessed 20 June 2019). https://www.gmc-uk.org/ethical-guidance/ethical-guidance-for-doctors/treatment-and-care-towards-the-end-of-life