2010 Evidence Update on Heart Failure

Following on from the partial update of NICE's Heart Failure guidelines in August 2010 and our last evidence update in October 2009 this update for health professionals and patients presents significant advances in knowledge about heart failure. Topics include diagnosis, pharmacology, organisation of care, devices, rehabilitation, palliative care and psychology. There is also a section on uncertainties identified and, as usual, expert summaries are included to help make sense of the new evidence presented.
Access: Available to the general public.

2010 Evidence Update on Heart Failure - Introduction

Introduction
Professor Tom Quinn

Professor of Clinical Practice, University of Surrey
Clinical Lead for NHS Evidence - Cardiovascular, Stroke and Vascular

Around 900,000 in the UK people have heart failure, with others at risk because of myocardial ischaemia, infarction or hypertensive heart disease but who have yet to develop heart failure symptoms. Although there have been recent improvements, patients with heart failure have a poor outlook, with 30-40% dying within a year of diagnosis.

NICE published an updated clinical guideline earlier this year [NICE Chronic Heart Failure guidance - partial update 2010]. The NHS Evidence- cardiovascular team have once again worked with experts to identify and summarise key new evidence from systematic reviews published since our last Evidence Update [Heart Failure Evidence Update 2009]. I hope you find this information useful.

I am grateful to our Expert reviewers, and to the team here at the University of Surrey (April Coombe, Dr Freda Mold, Rusell Dube, Mandy Howell, Magda Robertson and Dr Elena O'Selmo) for their sterling work in pulling this together.

2010 Evidence Update on Heart Failure - Methodology

Methodology
Our literature search was designed to add to the body of knowledge from last year's Heart Failure Evidence Update...

Searches were designed with a slight overlap period to ensure a good fit.

We brought together a small panel of experts to support us by summarising key evidence and commenting on key developments in the field.
We identified systematic reviews published between 1st April 2009 and 30th June 2010 and sifted them for relevance and quality. Material included in the last Evidence Update was excluded. Our reviewers were able to identify additional evidence relevent to any section.
In addition to a wide range of databases, we hand searched other key resources for relevant guidance, statistics and reports. Those sources can be seen in the Key Document section. We were able to include some evidence

published after the main search period.
Further details of the methods used to produce this Evidence Update can be viewed below together with the complete reference list.

2010 Evidence Update on Heart Failure - Contributors

Contributors

The following experts have assessed and summarised the evidence identified.

Professor Andrew L Clark
Consultant Cardiologist
Castle Hill Hospital

Andrew Clark was educated at Pembroke College, Cambridge, and trained in medicine at the Westminster Medical School. He trained in cardiology at Manchester Royal Infirmary, the National Heart and Lung Institute (London) and the Western Infirmary, Glasgow.
He is a founder member of the British Society for Heart Failure, and is a member of the working groups for Heart Failure and Cardiac Rehabilitation and Exercise Physiology in the European Society of Cardiology.

He is presently Reader and Honorary Consultant Cardiologist at Hull University and hospitals. He is responsible for running the echocardiography service in Hull, and he plays an active role in the day-to-day provision of cardiology services to the population of the East Riding of Yorkshire.

Professor Jonathan Mant
Professor of Primary care
General Practice and Primary Care Research Unit
University of Cambridge

Jonathan Mant is Professor of Primary Care Research at the University of Cambridge. He trained as a public health physician in the Oxford Region, and from 1992-97 was clinical lecturer in public health medicine at the University of Oxford. From 1997-2008 he was based in the Department of Primary Care & General Practice at the University of Birmingham, moving to Cambridge in October 2008. He is an associate director of the Stroke Research Network with responsibility for primary and community care, and has chaired the guideline development groups for three NICE guidelines: heart failure; prevention and control of tuberculosis; and type 2 diabetes. His current research focuses on stroke prevention and treatment in primary care settings.

Professor Tom Quinn
Professor of Clinical Practice at the University of Surrey
Clinical Lead for NHS Evidence - Cardiovascular, Stroke and Vascular

Tom Quinn is one of the UK's leading cardiovascular nurses and has made a significant contribution to practice, policy and research both nationally and internationally.
He was the UK's first Professor of Cardiac Nursing (at Coventry University), and took up post as Professor of Clinical Practice at the University of Surrey in January 2009. He has published extensively on acute cardiac and stroke care and his current responsibilities include being clinical lead for the NHS Evidence cardiovascular, stroke and vascular collections, part of the National Institute for Health and Clinical Excellence. He has been chief or co-applicant on more than £3.5m successful grant applications in the past two years, involving research into emergency cardiac and stroke care, and is on the steering

group for two major clinical trials. He continues to advise the Department of Health as a member of the Emergency Cardiac Care Board, is a member of the group developing the Stroke Specific Educational Framework sponsored by the Department of Health, and chairs the steering group for development of primary angioplasty for the NHS in Surrey. He is Honorary Clinical and Research Adviser to South East Coast Ambulance Service NHS Trust.
Tom Quinn is a member of the advisory committee for the European Society of Cardiology (ESC) Council of Cardiovascular Nursing and Allied Health Professions, a member of the ESC Working Group on Acute Cardiac Care, and a former Chairman of the ESC Working Group on Cardiovascular Nursing. He became a Fellow of the ESC in the mid 1990s and was awarded Fellowship of the Royal College of Nursing for his 'outstanding contribution to cardiac care' in 2006.

Ms Jillian P Riley
Head of Post-Graduate Education (Nursing)
Royal Brompton and Harefield NHS Foundation Trust

Jillian Riley is course director for the MSc Cardio-respiratory Nursing at Imperial College and is Head of Postgraduate Education (Nursing and Allied Professions) at the Royal Brompton Hospital. She also works in Professor Martin Cowie's Health Services Research Group evaluating the use of remote monitoring in patients' with chronic heart failure.
Jill has served on a number of expert committees at the British Cardiovascular Society, the British Heart Foundation and the European Council of Cardiovascular Nurses and Allied Professions of the European Society of Cardiology. Currently she sits on the board of the European Heart Failure Association of the ESC.

Dr Klaus Witte
Senior Lecturer and Honorary Consultant Cardiologist
University of Leeds and Leeds General Infirmary

Klaus Witte is a Senior Lecturer and Honorary Consultant Cardiologist at the University of Leeds and Leeds General Infirmary. He trained in medicine at Kings' College Hospital and subsequently in cardiology at Cardiff, Hull and Leeds. He is a founder member of the British Society of Heart Failure, and a member of the European Heart Rhythm Association. His research interests include exercise physiology, micronutrient therapy for chronic disease, and device therapy for heart failure.

Dr James Beattie
Consultant Cardiologist
Birmingham Heartland Hospital

After initial cardiology training in the University Department at Glasgow Royal Infirmary, he took up a research fellowship in heart failure at the University of California at Davis. He returned to the US as a research scientist at the Space Medicine Laboratory of the University of Texas Southwestern Medical School at Dallas. He was later appointed Lecturer in Cardiovascular Medicine at Birmingham University and has been a consultant since 1990.
For the past 15 years he has had an interest in palliative care for heart failure. He is currently a national clinical lead for the Heart Improvement Programme and with Michael Connolly, co-authored a report 'Supportive and Palliative Care for Advanced Heart Failure' which was published by the DoH in December 2004. He is a member of the circulatory forum of the National Council for Palliative Care and has worked with the Liverpool Care Pathway group to improve end-of-life care for those with heart disease.

2010 Evidence Update on Heart Failure - Devices

Expert summary on Devices by Dr Klaus Witte

Senior Lecturer and Honorary Consultant Cardiologist
University of Leeds and Leeds General Infirmary

Devices in heart failure

Cardiac resynchronisation therapy (CRT) is a pacemaker-based treatment for chronic heart failure (CHF) that has been accepted into mainstream treatment algorithyms as a result of several large randomised placebo-controlled studies demonstrating reductions in all-cause mortality and sudden cardiac death. Smaller studies have also demonstrated improvements in symptoms, cardiac function and exercise capacity. A recent meta-analysis (Lemos et al 2009) of the five main studies, confirmed reductions in total mortality (Absolute Risk Reduction [ARR] 6%) and sudden death (ARR 1%) along with a reduction in hospitalisation for heart failure (ARR 9%). There was a non-significant reduction in death due to heart failure. This is possibly the result of relatively short follow-up durations of the studies included although many deaths will have occurred in the community where deciding whether the death was sudden or due to an acute deterioration in heart failure is difficult. The meta-analysis confirms that CRT is a powerful treatment for symptomatic heart failure with left ventricular dysfunction and conduction delay. Two studies have demonstrated benefits of CRT in patients with cardiac dysfunction but less severe symptoms on a composite endpoint of heart failure hospitalisation and death (Moss et al 2009), and a composite heart failure severity score (Linde et al 2008). A subsequent meta-analysis(Lubitz et al 2010) of CRT in CHF patients with mild symptoms has combined the data from these two studies to show a reduction in heart failure events at one year. Longer-term follow-up of the REVERSE study (Daubert et al 2009) has since demonstrated that CRT can delay in time to hospitalisation or death. It is increasingly recognised, as with medical therapy, that early device treatment might be associated with even greater benefits on important outcome variables but that the follow-up time required to show these benefits in less symptomatic patients might need to be longer.

Two Systematic Reviews have been identified

1. Lemos Júnior HP, Atallah AN. Cardiac resynchronization therapy in patients with heart failure: systematic review. Sau Paulo Med J 2009;127:40-5
   Bottom-line conclusion: Patients receiving CRT had a significantly lower risk of hospitalization due to heart failure, but death rates due to heart failure were similar.
   [PubMed abstract] [full text] [DARE commentary]
2. Lubitz SA, Leong-Sit P, Fine N, Kramer DB, Singh J, Ellinor PT. Effectiveness of cardiac resynchronization therapy in mild congestive heart failure: systematic review and meta-analysis of randomized trials. Eur J Heart Fail 2010;4:360-6
   Bottom-line conclusion: CRT reduces heart failure events in patients with mild heart failure symptoms, left ventricular dysfunction, sinus rhythm, and prolonged QRS duration.
   [PubMed abstract] [DARE provisional record]

Additional Expert References

- Moss AJ, Hall WJ, Cannom DS, Klein H, Brown MW, Daubert JP, Estes NA 3rd, Foster E, Greenberg H, Higgins SL, Pfeffer MA, Solomon SD, Wilber D, Zareba W; MADIT-CRT Trial Investigators Cardiac-resynchronization therapy for the prevention of heart-failure events. N Engl J Med 2009;361:1329-38
  Bottom-line conclusion: CRT combined with ICD decreased the risk of heart-failure events in relatively asymptomatic patients with a low ejection fraction and wide QRS complex.
  [PubMed abstract] [full text]
- Linde C, Abraham WT, Gold MR, St John Sutton M, Ghio S, Daubert C; REVERSE (REsynchronization reVErses Remodeling in Systolic left vEntricular dysfunction) Study Group. Randomized trial of cardiac resynchronization in mildly symptomatic heart failure patients and in asymptomatic patients with left ventricular dysfunction and previous heart failure symptoms. J Am Coll Cardiol 2008;52:1834-43
  Bottom-line conclusion: The REVERSE (REsynchronization reVErses Remodeling in Systolic left vEntricular dysfunction) trial demonstrates that CRT, in combination with optimal medical therapy (+/-defibrillator), reduces the risk for heart failure hospitalization and improves ventricular structure and function.
  [PubMed abstract] [full text]
- Daubert C, Gold MR, Abraham WT, Ghio S, Hassager C, Goode G, Szili-Török T, Linde C; REVERSE Study Group. Prevention of disease progression by cardiac resynchronization therapy in patients with asymptomatic or mildly symptomatic left ventricular dysfunction: insights from the European cohort of the REVERSE (Resynchronization Reverses Remodeling in Systolic Left Ventricular Dysfunction) trial. J Am Coll Cardiol 2009;54:1837-46
  Bottom-line conclusion: CRT prevents the progression of disease in patients with asymptomatic or mildly symptomatic LV dysfunction
  [full text] [PubMed abstract]

Other Key Documents

Economic Evaluations

- Bond M, Mealing S, Anderson R, Dean J, Stein K, Taylor RS. Is combined resynchronisation and implantable defibrillator therapy a cost-effective option for left ventricular dysfunction? International Journal of Cardiology 2009; 137 (3): 206-15.
  [NEED commentary]

For details of ongoing research visit UK Clinical Research Network, Current Controlled Trials and WHO International Clincial Trials Registry Platform.

2010 Evidence Update on Heart Failure - Diagnosis

Expert summary on Diagnosis by Professor Johnathan Mant
Professor of Primary Care Research
University of Cambridge

Diagnosis and risk stratification

Diagnosis

NICE have recently updated their guideline on the management of chronic heart failure (NICE 2010) This has taken account of the growing evidence base for the role of natriuretic peptides and the prognostic significance of very high natriuretic peptide levels in the diagnosis of heart failure (see previous updates in this series). Key changes from the 2003 NICE guideline with regard to diagnosis in people with suspected heart failure:

- ECG is removed from the diagnostic pathway (but remains an important investigation for people with heart failure)
- People with a history of a previous myocardial infarction should be referred directly for echocardiography and specialist assessment
- All other patients should have a natriuretic peptide test, and further referral (for echocardiography and specialist assessment) should depend upon the result of that test
- People with very high natriuretic peptides should be referred urgently (within two weeks), and people with raised levels within six weeks
- The referral is now for echocardiography and specialist assessment, rather than simply for echocardiography.

A systematic review raises some question marks over the evidence base for natriuretic peptide testing in people aged 75 or over (Vaes et al 2009). However, four of the five studies that were included in this review were screening studies in an unselected population, so are not directly applicable to assessment of the role of natriuretic peptides in symptomatic patients. The one study in symptomatic patients found high sensitivity for left ventricular systolic dysfunction (96%), but that it was not good at identifying people with preserved ejection fraction heart failure (HEFPEF). The review highlights the need for further research in this area.

Risk Stratification

Natriuretic peptides have also been under the spotlight with regard to whether they have a role in guiding therapy in heart failure. It is known that high natriuretic peptide levels are associated with poor prognosis, and that therapy for heart failure reduces the peptide levels. Therefore, the question has been raised as to whether serial monitoring of natriuretic peptides could be used to guide treatment. (Proapakkham et al 2010) and (Felker et al 2009) conducted meta analyses to explore the impact of natriuretic guided therapy on outcome in people with chronic heart failure. Both concluded that natriuretic guided therapy was associated with better survival, but that this effect was attenuated in people aged 75 or over. Patients on natriuretic guided therapy received more intensive medical therapy than people receiving usual care, and it is probably this that is driving the difference in mortality. It is not clear whether there is any advantage to using natriuretic peptide guided monitoring over other formal approaches to monitoring. Nevertheless, it seems likely that serial monitoring of natriuretic peptides is of value for some patients. NICE recommends it is considered in patients under specialist care for whom uptitration is problematic or who have been admitted to hospital.

Atrial fibrillation is commonly associated with heart failure, and is well recognised as being associated with worse outcome. There has been some debate whether this is greater in people with heart

failure with preserved ejection fraction (HFPEF) as compared to people with left ventricular systolic dysfunction (LVSD). (Mamas et al 2009) conducted a systematic review of randomised controlled trials and observational studies to investigate the association between atrial fibrillation, and found that the increased mortality associated with atrial fibrillation (40% increase in risk of death) applied to both people with LVSD and people with HEFPEF. There is considerable interest in the prognostic value of echocardiographic parameters (see previous updates). (Rossi et al 2009) for the MeRGE collaborators have found that left atrial area is a predictor of outcome in people with LVSD, and so can be added to the list of potentially useful parameters for giving prognostic information.

Five Systematic Reviews were identified

1. Felker GM, Hasselblad V, Hernandez AF, O'Connor CM. Biomarker-guided therapy in chronic heart failure: a meta-analysis of randomized controlled trials. American Heart Journal 2009; 158 (3): 422-430.
   Bottom-line conclusion: Titration of therapy incorporating serial BNP or N-terminal pro-B-type natriuretic peptide levels is associated with a significant reduction in all-cause mortality compared to usual care in patients with chronic heart failure.
   [PubMed abstract] [DARE commentary]
2. Mamas MA, Caldwell JC, Chacko S, Garratt CJ, Fath-Ordoubadi F, Neyses L. A meta-analysis of the prognostic significance of atrial fibrillation in chronic heart failure. European Journal of Heart Failure 2009; 11 (7): 676-683.
   Bottom-line conclusion: The presence of AF is associated with an adverse prognosis in CHF irrespective of LV systolic function.
   [PubMed abstract] [full text] [DARE commentary]
3. Porapakkham P, Porapakkham P, Zimmet H, Billah B, Krum H. B-type natriuretic peptide-guided heart failure therapy. Archives of Internal Medicine 2010; 170(6): 507-514.
   Bottom-line conclusion: B-type natriuretic peptide–guided therapy reduces all-cause mortality in patients with chronic HF compared with usual clinical care, especially in patients younger than 75 years.
   [PubMed abstract] [DARE commentary]
4. Rossi A, Temporelli PL, Quintana M, Dini FL, Ghio S, Hillis GS, Klein AL, Ajmone Marsan N, Prior DL, Yu CM, Poppe KK, Doughty RN, Whalley GA. Independent relationship of left atrial size and mortality in patients with heart failure: an individual patient meta-analysis of longitudinal data (MeRGE Heart Failure). European Journal of Heart Failure 2009; 11(10): 929-936.
   Bottom-line conclusion: Left atrial area is a powerful predictor of outcome among HF patients with predominantly impaired systolic function, and is independent of, and provides additional prognostic information beyond LV systolic and diastolic function.
   [PubMed abstract] [DARE commentary]
5. Vaes B, de Ruijter W, Gussekloo J, Degryse J. The accuracy of plasma natriuretic peptide levels for diagnosis of cardiac dysfunction and chronic heart failure in

community-dwelling elderly: a systematic review. Age & Ageing 2009; 38 (6): 655-662.
Bottom-line conclusion: we found limited evidence supporting the use of plasma natriuretic peptide measurement for diagnosis of cardiac dysfunction or heart failure in the elderly of 75 years and over in the general population.
[full text] [PubMed abstract] [DARE commentary]

Expert References

- National Institute for Health and Clinical Excellence (NICE) – Chronic Heart Failure: management of chronic heart failure in adults in primary and secondary care. Clinical guideline 108, 2010. [full text]

Other Key Documents

Guidance and Policy

- European Society of Cardiology - Diagnosis and treatment of acute and chronic heart failure. [full text]

Audit and Statistics

- British Heart Foundation - Inpatient cases by main diagnosis and ethnic group, women, National Health Service hospitals, 2007/08, England [table]

For details of ongoing research visit UK Clinical Research Network, Current Controlled Trials and WHO International Clincial Trials Registry Platform.

2010 Evidence Update on Heart Failure - Key Documents

Key Documents

Below is a list of key documents other than the systematic reviews identified.

Guidelines

- American Heart Association - Medication Errors in Acute Cardiovascular and Stroke Patients. A Scientific Statement which includes Recommendations for Medication Safety in Acute Cardiovascular Care [full text]
- British Heart Foundation - Diastolic heart failure (FF 2 Apr10). Factfile written for GPs summarising the condition, its diagnosis, treatment and prognosis [full text]
- Department of Health - End of life care strategy [full text]
- European Society of Cardioloby - Cardiac Pacing and Cardiac Resynchronisation Therapy and Focussed Update CRT/HF [weblink] [full text]
- European Society of Cardiology - Diagnosis and treatment of acute and chronic heart failure [full text]
- National Institute for Health and Clinical Excellence (NICE) – Chronic Heart Failure: management of chronic heart failure in adults in primary and secondary care. Clinical guideline 108,

August 2010 [full text]

- National Institute for Health and Clinical Excellence (NICE) – Guidance on the prevention of cardiovascular disease at the population level. Public Health Guidance PH25 [full text]
- National Institute for Health and Clinical Excellence (NICE) – guidance and appraisals relating to heart failure [weblink]
- NHS Clinical Knowledge Summaries CKS - Heart Failure [full text]
- NHS Improvement – End of Life Care in Heart Failure – A Framework for Implementation [full text]
- NHS Institute for Innovation and Improvement – Focus On: Heart Failure. Note: access to the full-text is restricted to registered users with an NHS e-mail account [weblink]

Audit and Statistics

- American Heart Association - Heart Disease and Stroke Statistics — 2010 Update (At-A-Glance Version) [full text]
- American Heart Association - Heart Disease and Stroke Statistics — 2010 Update (All Charts) [full text]
- British Heart Foundation - Inpatient cases by main diagnosis and ethnic group, women, National Health Service hospitals, 2007/08, England [table]
- British Heart Foundation - Inpatient cases by main diagnosis and ethnic group, men, National Health Service hospitals, 2007/08, England [table]
- NHS Information Centre - National Heart Failure Audit 2008/2009 [full text]

Cochrane Protocols

- Enca M-R, Susan B, Chris H, Carolyn D, Anthony M, Taggart David P. Stem cell therapy for ischaemic heart disease and congestive heart failure. Cochrane Database of Systematic Reviews: Protocols 2009; Issue 3. [full text]
- Harald B, Nico H, Bengel J. Psychological and pharmacological interventions for depression in patients with coronary artery disease. Cochrane Database of Systematic Reviews: Protocols 2009; Issue 4. [full text]
- Madmani ME, Shahrour Y, Solaiman AY, Tamr Agha K, Essali A, Kadro W, Bowarshi K. Coenzyme Q10 for heart failure (Protocol). Cochrane Database of Systematic Reviews 2010, Issue 9. [full text]

Economic Evaluations

- Jolly K, Lip GY, Taylor RS, Raftery J, Mant J, Lane D, Greenfield S, Stevens A. The Birmingham rehabilitation uptake maximisation study (BRUM): a randomised controlled trial comparing home-based with centre-based cardiac rehabilitation. Heart 2009; 95 (1): 36-42.
  [NEED commentary]
- Bradley SM, Levy WC, Veenstra DL. Cost-consequences of ultrafiltration for acute heart failure: a decision model analysis. Circulation: Cardiovascular Quality and Outcomes 2009; 2 (6): 566-73.
  [NEED commentary]
- Collins SP, Schauer DP, Gupta A, Brunner H, Storrow AB, Eckman MH. Cost-effectiveness analysis of ED decision making in patients with non-high-risk heart failure. American Journal of Emergency Medicine 2009; 27 (3): 293-302.

[NEED commentary]
- Bennett K, Kabir Z, Barry M, Tilson L, Fidan D, Shelley E, Capewell S. Cost-effectiveness of treatments reducing coronary heart disease mortality in Ireland, 2000 to 2010. Value in Health 2009; 12 (1): 10-5.
[NEED commentary]
- Goeree R, Bowen JM, Blackhouse G, Lazzam C, Cohen E, Chiu M, Hopkins R, Tarride JE, Tu JV. Economic evaluation of drug-eluting stents compared to bare metal stents using a large prospective study in Ontario. International Journal of Technology Assessment in Health Care 2009; 25 (2): 196-207.
[NEED commentary]
- Taylor M, Scuffham PA, Chaplin S, Papo NL. An economic evaluation of valsartan for post-MI patients in the UK who are not suitable for treatment with ACE inhibitors. Value in Health 2009; 12 (4): 459-65.
[NEED commentary]
- Tibaldi V, Isaia G, Scarafiotti C, Gariglio F, Zanocchi M, Bo M, Bergerone S, Ricuada NA. Hospital at home for elderly patients with accute decompensation of chronic heart failure: a prospective randomized controlled trial. Archives of Internal Medicine 2009; 169 (17): 1569-75.
[NEED commentary]
- Bond M, Mealing S, Anderson R, Dean J, Stein K, Taylor RS. Is combined resynchronisation and implantable defibrillator therapy a cost-effective option for left ventricular dysfunction? International Journal of Cardiology 2009; 137 (3): 206-15.
[NEED commentary]
- Giordano A, Scalvini S, Zanelli E, Corra U, Longobardi GL, Ricci VA, Baiardi P, Glisenti F. Multicenter randomised trial on home-based telemanagement to prevent hospital readmission of patients with chronic heart failure. International Journal of Cardiology 2009; 131 (2): 192-9.
[NEED commentary]
- Mark DB, Knight JD, Velazquez EJ, Howlett JG, Spertus JA, Djokovic LT, Harding TM, Rankin GR, Drew LA, Szygula-Jurkiewicz B, Adlbrecht C, Anstrom KJ. Quality of life and economic outcomes with surgical ventricular reconstruction in ischemic heart failure: results from the Surgical Treatment for Ischemic Heart Failure trial. American Heart Journal 2009; 157 (5): 837-44, e3.
[NEED commentary]
- Dar O, Riley J, Chapman C, Dubrey SW, Morris S, Rosen SD, Roughton M, Cowie MR. A randomized trial of home telemonitoring in a typical elderly heart failure population in North West London: results of the Home-HF study. European Journal of Heart Failure 2009; 11 (3): 319-25.
[NEED commentary]

Useful Websites

- NHS Choices - Heart Failure [weblink]
- American Heart Association - Heart Failure [weblink]
- British Heart Foundation [weblink]
- British Society for Heart Failure [weblink]
- Heart Failure Matters (European Society of Cardiology) [weblink]

2010 Evidence Update on Heart Failure - Organisation of Care

Expert summary on Organisation of Care by Jillian Riley
Head of Post-Graduate Education (Nursing)
Royal Brompton and Harefield NHS Foundation Trust

Organisation of Care in Heart Failure

Recent interest has focused on the organisation of heart failure care to widen the access to structured monitoring and follow-up whilst developing sustainable models of care that address both economic issues and limited personnel resources. Much of this interest has centred on the development of care through remote patient monitoring (both through telephone support or telemonitoring). There is now a need to establish the benefit of these approaches more clearly and a number of systematic reviews have been published in the last year.

Klersy et al (2009) undertook a review of remote monitoring; using monitoring equipment placed in the patient's home (external monitoring) and implantable monitoring devices (implanted in electronic devices such as cardiac pacemakers or implantable defibrillators). The authors report a reduction in mortality (RR 0.83; 95% CI 0.73 – 0.95), a reduction in all-cause hospital admission (RR 0.93; 95% CI 0.87 – 0.99) and in heart failure related hospital admission (RR 0.71; 95% CI 0.64 – 0.8) with telemonitoring. However both randomised and cohort studies were included in the review and the authors report that the results were greater in the cohort studies.

Polisena et al (2010) undertook a systematic review of telemonitoring. Pooling the results of randomised trials and observational studies they report moderately larger effect sizes; telemonitoring reduced the risk of death (RR 0.64; 95% CI 0.48 – 0.85) when compared with usual care in patients recently discharged from hospital. They also reported that fewer patients were hospitalised (RR 0.77; 95% CI 0.65 – 0.9).

Following this Inglis et al (2010) undertook a systematic review and meta-analysis of remote patient monitoring; through telephone support or telemonitoring. Telemonitoring related only to external monitoring equipment, and all studies were compared with usual care. Using the Cochrane methodology they combined the results from 25 published randomised studies and over 8000 patients to report a statistically significant reduction in mortality with telemonitoring (RR 0.66; 95% CI 0.54-0.81, $p < 0.0001$) and a non-significant trend to a reduction in mortality with telephone support (RR 0.88, 95% CI 0.76-1.01, $p = 0.08$). They also report benefit in terms of hospital readmission (both all-cause and heart failure related), albeit with less impressive effect sizes. Cost effectiveness was one of the secondary outcomes in this review. Fewer studies reported on this outcome and the results varied according to both the intensity of the intervention and type of equipment used. Fewer studies also reported on some of their other secondary outcomes such as health-related quality of life or length of hospital stay, making it difficult to suggest the impact of telemonitoring on such outcomes.

Consistent with much of the evidence for the management of patients with heart failure, these studies largely recruited patients with left ventricular systolic dysfunction.

These reviews provide some evidence for the benefit of remote

patient monitoring through a reduction in mortality and the number of patients hospitalised. As such they suggest that remote monitoring could be offered alongside the more traditional models of home and clinic visits. In this way the different approaches can be matched to the clinical circumstances and needs (both medical and social) of the patient. However telemonitoring changes the traditional organisation of healthcare and the speed with which it is adopted may be influenced by the way in which it 'fits' within existing organisational structures and professional practices and by the attitudes of both professionals and patients. Whilst these reviews suggest there is much benefit to be gained from using telemonitoring, it has yet to become part of mainstream care.

Three Systematic Reviews have been identified

1. Inglis SC, Clark RA, McAlister FA, Ball J, Lewinter C, Cullington D, Stewart S, Cleland JGF (2010) Structured telephone support or remote telemonitoring programmes for patients with chronic heart failure. (Review). Cochrane library 2010. Issue 8
   Bottom-line conclusion: Structured telephone support and telemonitoring are effective in reducing the risk of all-cause mortality and CHF-related hospitalisations in patients with CHF; they improve quality of life, reduce costs, and evidence-based prescribing.
   [PubMed abstract] [full text]
2. Klersy, C., A. De Silvestri, A., Gabutti, G., Regoli, F., Auricchio, A. A meta-analysis of remote monitoring of heart failure patients. Journal of the American College of Cardiology 2009; 54 (18):1683-1694.
   Bottom-line conclusion: RPM confers a significant protective clinical effect in patients with chronic HF compared with usual care.
   [PubMed abstract] [DARE commentary]
3. Polisena J, Tran K, Cimon K, Hutton B, McGill S, Palmer K, Scott RE. Home telemonitoring for congestive heart failure: a systematic review and meta-analysis. Journal of Telemedicine and Telecare. 2010; 16 (2):68-76.
   Bottom-line conclusion: Patient quality of life and satisfaction with home telemonitoring were similar or better than with usual care
   [PubMed abstract]

Other Key Documents

Economic Evaluations

- Dar O, Riley J, Chapman C, Dubrey SW, Morris S, Rosen SD, Roughton M, Cowie MR. A randomized trial of home telemonitoring in a typical elderly heart failure population in North West London: results of the Home-HF study. European Journal of Heart Failure 2009; 11 (3): 319-25.
  [NEED commentary]
- Giordano A, Scalvini S, Zanelli E, Corra U, Longobardi GL, Ricci VA, Baiardi P, Glisenti F. Multicenter randomised trial on home-based telemanagement to prevent hospital readmission of patients with chronic heart failure. International Journal of Cardiology 2009; 131 (2): 192-9.
  [NEED commentary]
- Tibaldi V, Isaia G, Scarafiotti C, Gariglio F, Zanocchi M, Bo M, Bergerone S, Ricuada NA. Hospital at home for elderly patients with accute decompensation of chronic heart failure: a prospective randomized controlled trial. Archives of Internal Medicine 2009; 169

(17): 1569-75.
[NEED commentary]

For details of ongoing research visit UK Clinical Research Network, Current Controlled Trials and WHO International Clincial Trials Registry Platform.

2010 Evidence Update on Heart Failure - Palliative Care

Expert summary on Palliative Care by James Beattie **Heart of England NHS Foundation Trust**

The authors offer a review of the effects of advanced heart failure close to the end of life (Stage D) as perceived by patients and informal carers. The primary purpose was to examine this from the social care perspective to inform the development of such care for affected individuals and their families.
A systematic literature review of articles in English from 1990 yielded 15 full text articles later subjected to thematic analysis. These included 9 based on one-to-one interviews with heart failure patients, 2 mixed methods studies combining survey data and interviews, and 4 studies including informal carers in the interview process.
Broad topical domains were defined in challenges related to heart failure and also in coping with those challenges.
Thematic analysis identified 5 challenges:
1. Working with the health care system - largely mediated by communication issues and difficulties accessing social support.
2. Life disruption - loss of personal role and disturbance of family relationships and activities.
3. Social isolation - loss of friends and social life with a dependency on others to maintain limited social contact.
4. Effects of symptoms - sense of 'imprisonment' due to limiting physical symptoms, anxiety / depression, and the effects of comorbidities.
5. Living with uncertainty - difficulties dealing with prognostic ambiguity and the possibility of dying.

Coping with these challenges generated 3 broad areas of need:
1. Effective clinical management of the heart failure state.
2. Dealing with the dying process.
3. Provision of accessible social support.

Implications for social work practice emerged in a realisation that despite difficulties in prognostication, the needs of those with heart failure were similar to those with other long term conditions. Social workers may facilitate care coordination and provide linkage to physical or psychological care across a range of health care settings. Social care support needs to be individualised highlighting the importance of good communication. The need for further social care research specifically related to heart failure / end of life care was acknowledged, emphasising gaps in knowledge on the effects of racial and ethnic diversity and other potential cultural barriers to social care support.

One Systematic Review was identified

1. Hopp, F. P., Thornton, N., Martin, L. The lived experience of heart failure at the end of life: a systematic literature review. Health &

Social Work 2010; 35 (2): 109-117.
Bottom-line conclusion: Greater attention to these issues in the social work literature is needed, with a particular focus on the role of racial and ethnic diversity as they pertain to people with HF facing end-of-life issues.
[PubMed abstract]

Other Key Documents

Guidance and Policy

- NHS Improvement – End of Life Care in Heart Failure – A Framework for Implementation [full text]

For details of ongoing research visit UK Clinical Research Network, Current Controlled Trials and WHO International Clincial Trials Registry Platform.

2010 Evidence Update on Heart Failure - Pharmacological Therapy

Expert summary on Pharmacological Therapy
Professor Andrew L Clark, MA, MD, FRCP

Consultant Cardiologist, Castle Hill Hospital

Pharmacological therapy in heart failure

Renin-Angiotensin system antagonists

The longest-serving group of agents used to prevent disease progression and improve prognosis for patients with chronic heart failure is, of course, angiotensin converting enzyme inhibitors (ACEi). Work over many years has established that ACEi are effective in reducing the risk of future events in patients with ischaemic heart disease without heart failure, and even in some populations of high risk patients.
The side-effects of ACEi, particularly the dry cough, makes angiotensin receptor blockers (ARB) appear attractive in comparison, but the evidence that ARBs are as effective as ACEi is not at all conclusive. Some authors are concerned in particular that ARBs may increase the risk of myocardial infarction. (Strauss et al 2006)
Baker and colleagues (Baker et al 2009) have reviewed the available evidence on the effect of ACEi and ARB on outcomes in patients with stable coronary disease but no heart failure. The conclusion is that the addition of an ACEi to standard therapy reduces the risk of adverse events by around 15%, but at a cost of an increase in the risk of syncope and cough. There is, however, no substantial evidence of benefit for ARBs in this clinical scenario. Difficulties in interpreting the data arise from the lack of substantial trials with ARBs, and the fact that relatively low doses of ARBs have been used in many clinical contexts. It is now becoming clear, for example, that high dose ARBs convey more benefit than low in patients with overt heart failure. (Konstam et al 2009)
A fascinating question with ACEi and ARB in heart failure is whether they are helpful in patients with a normal left systolic ventricular

function, a condition going under many aliases such as “diastolic heart failure” and “Heart failure with Normal Ejection Fraction” (HeFNEF, my preferred term). Quite what the diagnosis of HeFNEF means, and whether patients with HeFNEF have heart failure as the condition is commonly understood, remains controversial. Shah et al (Shah et al 2010) have assessed the evidence from three major studies of inhibitors of the renin-angiotensin system in patients with HeFNEF with over 8 000 patients, and found no evidence of an effect on either mortality or heart failure hospitalisation. The reason is unclear, but is consistent with the view that HeFNEF may be a mistaken diagnosis.
One of the major risk factors for heart failure is hypertension, and reducing blood pressure reduces the risk of developing heart failure. An obvious question is whether ACEi or ARB therapy is better than other agents in reducing the risk. Verdeccia et al (Verdeccia et al 2009) found that “the risk of CHF decreased by 24% for each 5 mmHg reduction in systolic BP” and that ACEi or ARB therapy had no obvious benefit as compared with betablockers or diuretics.
By contrast, however, calcium antagonists were associated with an increase in the risk of heart failure. Whether the increased risk is related to the fluid retention encouraged by calcium antagonists isn’t clear, but the findings are consistent with earlier papers suggesting that calcium antagonists may not be the best agents for treating hypertension.

Aldosterone antagonists

Aldosterone antagonists are also helpful in heart failure, but the details of which patients should be treated are uncertain. McKenna (McKenna et al 2010) analysed the data available for patients with left ventricular systolic dysfunction following myocardial infarction, but is necessarily limited by the fact that only the EPHESUS trial (Pitt et al 2003) (with eplerenone) has included a large enough number of patients to give useful information on hard outcomes.
The interest is provoked in part by cost. Eplerenone (expensive) has only been shown to work when initiated during a short window following acute myocardial infarction; spironolactone (cheap) has only been shown to confer benefit in patients with severely symptomatic chronic heart failure. It’s not clear that either agent can be used in other clinical scenarios, and these two meta-analyses do not really answer the question. Far more information will come from the results of clinical trials: the EMPHASIS-HF trial of eplerenone in mild heart failure has already been stopped early due to its beneficial effect, suggesting that the meta-analyses will need to be re-run shortly.(Pfizer 2010)

Beta blockers

A major outstanding issue with betablocker therapy is whether there is any substantial difference between cardioselective and non-selective drugs. De Peuter (de Peuter et al 2009) has examined the available trials in both patients with heart failure and those with acute coronary syndrome and found some evidence that non-selective agents had a better effect on mortality in both conditions. However, the data are difficult to interpret: there are few trials directly comparing the two treatments, the agents used and the clinical scenarios investigated were very different and there was marked heterogeneity in the quality and size of the studies included.

As far as heart failure patients are concerned, the best evidence continues to be the COMET study suggesting that the non-selective agent carvedilol was associated with better outcomes than the selective agent metoprolol. (Poole-Wilson et al 2003)

Statin therapy

Should statins be prescribed for patients with chronic heart failure? Post hoc surveys of patients with heart failure suggest that those on statins have a better outcome than those who do not, but randomised studies have shown no convincing evidence of benefit. Lipinski and colleagues (Lipinski et al 2009) managed to find studies containing 10 192 patients treated with different statins for different lengths of time. Whilst finding that there was no effect on mortality, they concluded that statin therapy did decrease risk of hospitalization for worsening HF during follow-up, and also claimed that there was heterogeneity between statins: use of atorvastatin was associated with reduced mortality.
It is difficult to support the results. The overwhelming majority of the power of the meta-analysis comes from the two neutral rosuvastatin studies with 9 585 (94%) of the patients. The atorvastatin trials were all very small with very small numbers of events. The effect on hospitalisation of statins is also highly debatable: cardiovascular hospitalisations were not affected whereas heart failure hositalisations were, an effect of doubtful significance. This latter effect was in any case also highly dependent upon the very small atorvastatin studies.
It's important to remember how dependent meta-analysis is on the quality of the studies included. The data here do not allow an adequate judgement to be made on the benefits of statins, and certainly not on the relative effect of statins, in people with heart failure. The best evidence comes from the two large randomised trials demonstrating no benefit, at least from rosuvastatin.

Treatment of anaemia

Patients with chronic heart failure are commonly anaemic, a potential target for therapy. Three meta-analyses have examined the effects of erythropoiesis-stimulating agents for anaemia in patients with CHF. Both Tehrani (Tehrani et al 2009) and van den Meer (van den Meer et al 2009) included the same 7 studies in their analyses and reported a lower risk of hospitalisation in treated patients, improvements in exercise capacity and improvements in symptoms. In the Cochrane review (Ngo et al 2010), Ngo included a greater number of studies, but endorsed the general conclusion that treatment with erythropoiesis-stimulating agents improved exercise capacity and symptoms of patients with CHF and anaemia, and some clinical outcomes.
There is not yet enough evidence for erythropoiesis-stimulating agents to enter routine practice. The individual studies have all been relatively small and underpowered. A complicating issue is that of iron replacement therapy: there has been inconsistent use of iron in the studies included in the meta-analyses, and there is good clinical trial evidence that iron alone might be helpful. (Anker er all 2009)As Ngo points out, "… well-designed studies with careful attention to dose, haemoglobin treatment target and associated iron therapy" are vital to understand how to treat anaemia in patients with CHF.

Acute heart failure

Patients with acute (rather than chronic) heart failure are not often studied. Usually such patients present with acute pulmonary oedema and are treated with vasodilators and diuretics. Positive inotropic agents are used in different amounts in different countries, but with little definitive evidence that they are beneficial.
Dobutamine is most often used, but there is evidence it is associated with a worse prognosis.
Levosimendan appears to offer advantages, and is the subject of Delaney's meta-analysis (Delaney et al 2010). One striking finding was that very few of the included studies were of high methodological quality. Whilst levosimendan use was associated with a lower mortality than dobutamine, it was no better than placebo. There was some improvement in haemodynamic variables compared to placebo, but the effect was not striking.
Patients with acute heart failure remain an under-researched group and more evidence is need to improve their management.

Ten Systematic Reviews were identified

1. Baker WL , Coleman CI, Kluger J, Reinhart KM, Talati R, Quercia R, Phung OJ, White CM. Systematic review: comparative effectiveness of angiotensin-converting enzyme inhibitors or angiotensin II-receptor blockers for ischemic heart disease. Ann Intern Med 2009;151:861-71
   Bottom-line conclusion: Adding an ACE inhibitor to standard medical therapy improves outcomes, including reduced risk for mortality and myocardial infarctions.
   [DARE commentary] [full text] [PubMed abstract]

2. Shah RV, Desai AS, Givertz MM. The effect of renin-angiotensin system inhibitors on mortality and heart failure hospitalization in patients with heart failure and preserved ejection fraction: a systematic review and meta-analysis. J Card Fail 2010;16:260-7
   Bottom-line conclusion: Although RAS inhibition may be valuable in the management of comorbidities related to HF-PEF, RAS inhibition in HF-PEF is not associated with consistent reduction in HF hospitalization or mortality in this emerging cohort
   [PubMed abstract]

3. Verdecchia P, Angeli F, Cavallini C, Gattobigio R, Gentile G, Staessen JA, Reboldi G. Blood pressure reduction and renin-angiotensin system inhibition for prevention of congestive heart failure: a meta-analysis. Eur Heart J 2009;30:679-88
   Bottom-line conclusion: BP reduction is beneficial for the prevention of CHF. Over and beyond BP reduction, the protective effect of ACEIs and ARBs is greater than that of CCBs.
   [full text] [PubMed abstract] [DARE commentary]

4. McKenna C, Burch J, Suekarran S, Walker S, Bakhai A, Witte K, Harden M, Wright K, Woolacott N, Lorgelly P, Fenwick L, Palmer S. A systematic review and economic evaluation of the clinical effectiveness and cost-effectiveness of aldosterone antagonists for postmyocardial infarction heart failure. Health Technol Assess 2010;14:1-162
   Bottom-line conclusion: It consistently emerged that, compared with usual care, use of an aldosterone antagonist appears to be a highly cost-effective strategy for the management of postMI HF patients in the NHS.

[PubMed abstract] [DARE provisional record]

5. de Peuter OR, Lussana F, Peters RJ, Büller HR, Kamphuisen PW. A systematic review of selective and non-selective beta blockers for prevention of vascular events in patients with acute coronary syndrome or heart failure. Neth J Med 2009;67:284-94
Bottom-line conclusion: Additional beta2-receptor blockade may be more effective than beta1-receptor blockade alone in preventing total mortality and vascular events in patients with ACS or, to a lesser extent, HF
[full text]

6. Lipinski MJ, Cauthen CA, Biondi-Zoccai GG, Abbate A, Vrtovec B, Khan BV, Vetrovec GW. Meta-analysis of randomized controlled trials of statins versus placebo in patients with heart failure. Am J Cardiol 2009;104:1708-16
Bottom-line conclusion: meta-analysis of randomized controlled trials demonstrated that statins are safe and improve LVEF and decrease hospitalization for worsening HF.
[PubMed abstract] [DARE commentary]

7. Tehrani F, Dhesi P, Daneshvar D, Phan A, Rafique A, Siegel RJ, Cercek B. Erythropoiesis stimulating agents in heart failure patients with anemia: a meta-analysis. Cardiovasc Drugs Ther 2009;23:511-8
Bottom-line conclusion: In patients with heart failure and anemia, erythropoiesis stimulating agent therapy appears to have a positive effect on several important cardiovascular parameters, compared to control therapy.
[PubMed abstract] [DARE provisional record]

8. van der Meer P, Groenveld HF, Januzzi JL Jr, van Veldhuisen DJ. Erythropoietin treatment in patients with chronic heart failure: a meta-analysis. Heart 2009;95:1309-14
Bottom-line conclusion: In chronic HF, treatment with ESPs is not associated with a higher mortality rate or more adverse events, whereas a beneficial effect on HF hospitalisation is seen.
[PubMed abstract] [DARE commentary]

9. Ngo K, Kotecha D, Walters JA, Manzano L, Palazzuoli A, van Veldhuisen DJ, Flather M. Erythropoiesis-stimulating agents for anaemia in chronic heart failure patients. Cochrane Database Syst Rev 2010:CD007613.
Bottom-line conclusion: Meta-analysis of small RCTs suggests that ESA treatment in patients with symptomatic CHF and mild anaemia (haemoglobin more than 10g/dL) can improve anaemia and exercise tolerance, reduce symptoms and have benefits on clinical outcomes.
[PubMed abstract]

10. Delaney A, Bradford C, McCaffrey J, Bagshaw SM, Lee R. Levosimendan for the treatment of acute severe heart failure: a meta-analysis of randomised controlled trials. Int J Cardiol 2010;138:281-9
Bottom-line conclusion: Levosimendan improved haemodynamic parameters when compared with placebo, without showing evidence of survival benefit. Levosimendan improved both haemodynamics and survival when compared with dobutamine.
[PubMed abstract]

Additional Expert References

- Strauss MH, Hall AS. Angiotensin receptor blockers may increase

risk of myocardial infarction: unraveling the ARB-MI paradox. Circulation 2006;114:838-54.
Bottom-line conclusion: The evidence is persuasive that the reduction in incidence of both MI and CV death seen with ACEIs is above that achieved by blood pressure lowering alone and is significantly greater than that achieved by ARBs in high-risk patients.
[full text] [PubMed abstract]

- Konstam MA, Neaton JD, Dickstein K, Drexler H, Komajda M, Martinez FA, Riegger GA, Malbecq W, Smith RD, Guptha S, Poole-Wilson PA; HEAAL Investigators. Effects of high-dose versus low-dose losartan on clinical outcomes in patients with heart failure (HEAAL study): a randomised, double-blind trial. Lancet 2009;374:1840-8
Bottom-line conclusion: These findings show the value of up-titrating ARB doses to confer clinical benefit.
[PubMed abstract]

- Pitt B, RemmeW, Zannad F, Neaton J, Martinez F, Roniker B, Bittman R, Hurley S, Kleiman J, Gatlin M, Eplerenone Post-Acute Myocardial Infarction Heart Failure Efficacy Survival Study Investigators. Eplerenone, a selective aldosterone blocker, in patients with left ventricular dysfunction after myocardial infarction. N Engl J Med 2003;348:1309–1321
Bottom-line conclusion: The addition of eplerenone to optimal medical therapy reduces morbidity and mortality among patients with acute myocardial infarction complicated by left ventricular dysfunction and heart failure.
[PubMed abstract]

- Pfizer. Pfizer announces EMPHASIS-HF trial to halt recruitment due to significant benefit observed in patients treated with Inspra (eplerenone) [press release]. May 27, 2010
Bottom-line conclusion: The interim analysis showed that patients treated with INSPRA®(eplerenone), in addition to current standard of care,experienced a significant reduction in risk of cardiovascular (CV) death or heart failure (HF) hospitalization.
[full text]

- Anker SD, Comin Colet J, Filippatos G, Willenheimer R, Dickstein K, Drexler H, Lüscher TF, Bart B, Banasiak W, Niegowska J, Kirwan BA, Mori C, von Eisenhart Rothe B, Pocock SJ, Poole-Wilson PA, Ponikowski P; FAIR-HF Trial Investigators. Ferric carboxymaltose in patients with heart failure and iron deficiency. N Engl J Med 2009;361:2436-48
Bottom-line conclusion: Treatment with intravenous ferric carboxymaltose in patients with chronic heart failure and iron deficiency, with or without anemia, improves symptoms, functional capacity, and quality of life; the side-effect profile is acceptable.
[PubMed abstract]

- Poole-Wilson PA, Swedberg K, Cleland JG, Di Lenarda A, Hanrath P, Komajda M, Lubsen J, Lutiger B, Metra M, Remme WJ, Torp-Pedersen C, Scherhag A, Skene A; Carvedilol Or Metoprolol European Trial Investigators. Comparison of carvedilol and metoprolol on clinical outcomes in patients with chronic heart failure in the Carvedilol Or Metoprolol European Trial (COMET): randomised controlled trial. Lancet 2003;362:7-13
Bottom-line conclusion: Our results suggest that carvedilol extends survival compared with metoprolol.
[full text] [PubMed abstract]

Other Key Documents

Guidelines

- American Heart Association - Medication Errors in Acute Cardiovascular and Stroke Patients. A Scientific Statement which includes Recommendations for Medication Safety in Acute Cardiovascular Care [full text]

Cochrane Protocols

- Enca M-R, Susan B, Chris H, Carolyn D, Anthony M, Taggart David P. Stem cell therapy for ischaemic heart disease and congestive heart failure. Cochrane Database of Systematic Reviews: Protocols 2009; Issue 3. [full text]
- Harald B, Nico H, Bengel J. Psychological and pharmacological interventions for depression in patients with coronary artery disease. Cochrane Database of Systematic Reviews: Protocols 2009; Issue 4. [full text]
- Madmani ME, Shahrour Y, Solaiman AY, Tamr Agha K, Essali A, Kadro W, Bowarshi K. Coenzyme Q10 for heart failure (Protocol). Cochrane Database of Systematic Reviews 2010, Issue 9. [full text]

Economic Evaluations

- Bennett K, Kabir Z, Barry M, Tilson L, Fidan D, Shelley E, Capewell S. Cost-effectiveness of treatments reducing coronary heart disease mortality in Ireland, 2000 to 2010. Value in Health 2009; 12 (1): 10-5.
  [NEED commentary]
- Taylor M, Scuffham PA, Chaplin S, Papo NL. An economic evaluation of valsartan for post-MI patients in the UK who are not suitable for treatment with ACE inhibitors. Value in Health 2009; 12 (4): 459-65.
  [NEED commentary]

For details of ongoing research visit UK Clinical Research Network, Current Controlled Trials and WHO International Clincial Trials Registry Platform.

2010 Evidence Update on Heart Failure - Psychology

There is no expert review on psychology and heart failure - instead significant new evidence is listed below

One Systematic Review was identified

1. Kang-Yi, CD. and Gellis, ZD. A systematic review of community-based health interventions on depression for older adults with heart disease. Aging & Mental Health 2010; 14(1): 1-19.
   Bottom-line conclusion: Mixed evidence for community-based heart disease interventions on depression outcomes was found.
   [PubMed abstract] [DARE commentary]

One Cochrane Protocol was identified

- Harald B, Nico H, Bengel J. Psychological and pharmacological interventions for depression in patients with coronary artery disease. Cochrane Database of Systematic Reviews: Protocols 2009; Issue 4. [full text]

For details of ongoing research visit UK Clinical Research Network, Current Controlled Trials and WHO International Clincial Trials Registry Platform.

2010 Evidence Update on Heart Failure - Rehabilitation

There is no expert summary for the Rehabilitation section. Instead a list of new evidence identified is included below.

Five Systematic Reviews were identified

1. Davies Ed, J., Moxham, T., Rees, K., Singh, S.,Coats Andrew, JS.,Ebrahim, S.,Lough, F., Taylor Rod, S. Exercise based rehabilitation for heart failure. Cochrane Database of Systematic Reviews 2010; DOI: 10.1002/14651858.CD003331.pub3.
   Bottom-line conclusion: Exercise training may offer important improvements in patients' health-related quality of life.
   [full text] [PubMed abstract] [DARE provisional record]

2. Eshah NF and Bond AE. Cardiac rehabilitation programme for coronary heart disease patients: An integrative literature review. International Journal of Nursing Practice 2009; 15 (3):131–139.
   Bottom-line conclusion: Cardiac rehabilitation programmes provided significant improvement in participants' quality of life, exercise capacity, lipid profile, body mass index, body weight, blood pressure, resting heart rate, survival rate, mortality rate and decreased myocardial infarction (MI) risk factors, although there was limited participation.
   [PubMed abstract]

3. Hwang, R. and T. Marwick. Efficacy of home-based exercise programmes for people with chronic heart failure: a meta-analysis. European Journal of Cardiovascular Prevention and Rehabilitation 2009; 16 (5): 527-35.
   Bottom-line conclusion: Home-based exercise programmes have been shown to benefit people with heart failure in the short term.
   [PubMed abstract] [DARE provisional record]

4. Spruit, MA., Eterman, RM., Hellwig, VA., Janssen, PP., Wouters, EF., Uszko-Lencer, NH. Effects of moderate-to-high intensity resistance training in patients with chronic heart failure. Heart 2009; 95 (17): 1399-1408.
   Bottom-line conclusion: The current peer-reviewed evidence seems inadequate to generally recommend incorporation of resistance training into exercise-based rehabilitation programmes for patients with CHF.
   [PubMed abstract] [DARE provisional record]

5. Taylor Rod S, Dalal H, Jolly K, Moxham T, Zawada A. Home-based versus centre-based cardiac rehabilitation. Cochrane Database of Systematic Reviews 2010, Issue 1. Art. No.: CD007130.
   Bottom-line conclusion: Home and centre based forms of cardiac rehabilitation seem to be equally effective in improving clinical and health related quality of life outcomes in patients with a low risk of further events after myocardial infarction or revascularisation.

[full text] [PubMed abstract]

Other Key Documents

Guidance and Policy

- ·NHS Clinical Knowledge Summaries CKS - Heart Failure
  [full text]

Economic Evaluations

- Jolly K, Lip GY, Taylor RS, Raftery J, Mant J, Lane D, Greenfield S, Stevens A. The Birmingham rehabilitation uptake maximisation study (BRUM): a randomised controlled trial comparing home-based with centre-based cardiac rehabilitation. Heart 2009; 95 (1): 36-42.
  [NEED commentary]

For details of ongoing research visit UK Clinical Research Network, Current Controlled Trials and WHO International Clincial Trials Registry Platform.

2010 Evidence Update on Heart Failure - Uncertainties

Uncertainties

Below is a list of uncertainties from systematic reviews identified in the course of this evidence update. These will be translated into PICO format (Patient, Intervention, Comparison, Outcome) for entry onto the DUETs (Database of Uncertainties about the Effects of Treatments) database of uncertainties in due course. See www.library.nhs.uk/duets/ for further information about the database.

One Systematic Review identifying uncertainties in heart failure has been identified

1. Spruit, MA., Eterman, RM., Hellwig, VA., Janssen, PP., Wouters, EF., Uszko-Lencer, NH. Effects of moderate-to-high intensity resistance training in patients with chronic heart failure. Heart 2009; 95 (17): 1399-1408.
   Bottom-line conclusion: The current peer-reviewed evidence seems inadequate to generally recommend incorporation of resistance training into exercise-based rehabilitation programmes for patients with CHF.
   [PubMed abstract] [DARE provisional record]