

# Chronic heart failure: management of chronic heart failure in adults in primary and secondary care

A clinical guideline for the NHS in England and Wales

## APPENDIX J: EVIDENCE TABLES

### Section 10: Supporting the patient and carer

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## **Communication**

See also the Section 7 evidence tables for “Communication and adherence to therapy”.

### ***Experimental Studies***

Paper	Stewart, M. A. 1995, "Effective physician-patient communication and health outcomes: a review.", <i>CMAJ.</i> , vol. 152, no. 9, pp. 1423-1433.
Description	Systematic review
N=	number of participants not stated
Intervention	Trained physicians Vs not trained
Outcomes	Physiological status Functional status Symptom resolution Emotional status
Results	<ul style="list-style-type: none"><li>• 4 Studies of communication intervention in initial management plan showed improvements in anxiety, better functional status, lower pain levels, and shorter LOS</li><li>• One study found no significant difference in improved mood</li></ul>
Comments	Generalised population Various outcomes
Reference	227

Paper	Walsh, R. A., Girgis, A., & Sanson-Fisher, R. W. 1998, "Breaking bad news. 2: What evidence is available to guide clinicians?", <i>Behavioral.Medicine</i> , vol. 24, no. 2, pp. 61-72.
Description	Systematic review
N=	n=10 RCT's reviewed of 302 identified, number of participants not stated
Intervention	Information sheets Education Cassette of consultation
Outcomes	Varied across papers Psychological outcome Patient satisfaction Knowledge
Results	<ul style="list-style-type: none"> <li>• Only significant findings for effectiveness of information provision in patient satisfaction</li> <li>• No effect on psychological outcome</li> <li>• Some studies showed that patients' knowledge improved</li> </ul>
Comments	<p>A descriptive review.          Disparate studies.          Suggests further research for</p> <ul style="list-style-type: none"> <li>- Supplementing physician consultation with others</li> <li>- Need for psychometrically robust performance scales</li> <li>- Modifiable elements of bad news consultation</li> </ul>

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Paper	Ptacek, J. T. & Eberhardt, T. L. 1996, "Breaking bad news. A review of the literature.", <i>JAMA</i> , vol. 276, no. 6, pp. 496-502.
Description	Systematic review
N=	number of participants not stated
Intervention	Various communication strategies
Outcomes	Patient satisfaction Physician stress
Results	<ul style="list-style-type: none"> <li>• Majority of the evidence is not empirical</li> <li>• Even some positive messages in all but terminal illness diagnosis</li> <li>• Diagnoses that fail to match one's expectations may have more severe impact</li> </ul>
Comments	Possible publication bias – not publishable area, studies may be missed Physician led studies mainly
Reference	226

Paper	Brown, S. A. 1990, "Studies of educational interventions and outcomes in diabetic adults: a meta-analysis revisited", <i>Patient.Education.&amp; Counseling.</i> , vol. 16, no. 3, pp. 189-215.
Description	Systematic review
N=	number of participants not stated
Intervention	Many intervention methods broken down by which discipline led
Outcomes	Knowledge effects Self care behaviour effects Metabolic control Psychological outcomes
Results	<ul style="list-style-type: none"> <li>• Patients who receive education, can have improved self-care behaviours, and psychological outcomes</li> </ul>
Comments	A good quality review in terms of bias limitation Diabetic patient focus Focus on education as opposed to communication
Reference	224

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Paper	Romm, R. J., Hulka, B. S., & Mayo, F. 1976, "Correlates of outcomes in patients with congestive heart failure", <i>Medical Care</i> , vol. 14, no. 9, pp. 765-776.
Description	Case control study
N=	n=122 Age =63yrs, male =43%, NHYA I =13%, II =30%, III =40%, IV =30% Indiana, USA
Intervention	Communication based on the knowledge of patients of information which the physician expected to know ; amongst other variables
Outcomes	Two outcomes of activity and symptoms dichotomised on above or below median score for the study population
Results	<ul style="list-style-type: none"> <li>• Communication had no significant correlation with outcomes in bi-variate analysis</li> </ul>
Comments	Largest significant correlates of the outcome measures were their respective values on baseline assessment Case assessment for inclusion on HF criteria not validated.

### Non-experimental studies

Paper	1997, <i>Improving communication between doctors and patients. A report of the working party.</i> , Royal College of Physicians of London, London.
Description	Guidelines
N=	
Intervention	
Outcomes	
Results	<ul style="list-style-type: none"> <li>• Guidelines for a good communication strategy</li> <li>Provide the most important information 1<sup>st</sup></li> <li>Explain how each item will effect the patient personally</li> <li>Present information in separate categories</li> <li>Make advice specific and concrete</li> <li>Use words the patient knows or define unfamiliar words, write down key words, draw a diagram and keep a copy</li> <li>Repeat the information using the same words each time and prepare material written or taped to back up the handwritten note.</li> <li>• Evidence of poor communication having serious consequences</li> <li>Sense of uncertainty may impair their ability to comply with recommended treatments.</li> <li>• Evidence of informed patients improving</li> <li>They recover more quickly than when they are simply passive recipients of treatment</li> </ul>
Comments	Guidance produced by expert committee, drafting recommendations with evidence to back up statements where available
Reference	222

Paper	Girgis, A. & Sanson-Fisher, R. W. 1995, "Breaking bad news: consensus guidelines for medical practitioners.", <i>Journal of Clinical Oncology</i> , vol. 13, no. 9, pp. 2449-2456.
Description	Guidelines
N=	
Intervention	
Outcomes	
Results	<ul style="list-style-type: none"> <li>• Only 35% of doctors felt competent at interactional skills, including breaking bad news</li> <li>• Uninformed patients may seek poor advice and are more likely to be non-compliant with treatment</li> <li>• Denial is a valid coping strategy, so not always valid to give full disclosure</li> <li>• Only one person should be responsible for breaking bad news ? to other studies</li> <li>• Physicians should: assess understanding; give facts; allow feelings; give time; review (24 hours); explain treatment options; advise on support services; document in case notes</li> </ul>
Comments	<p>Guideline based on review of literature Medline 1973-1993          Only 4 RCTs in 261 papers identified          28 members on consensus panel          100 patients questioned          Do physicians' thoughts equal patients' perspectives          Difficult to define useful and appropriate outcomes for RCTs on effectiveness          A needs assessment instrument maybe required          Trial sensitive to population confounders</p>
Reference	238

Paper	Faulkner, A., Maguire, P., & Regnard, C. 1994, "Breaking bad news--a flow diagram", <i>Palliative.Medicine</i> , vol. 8, no. 2, pp. 145-151.
Description	Comment
N=	
Intervention	
Outcomes	
Results	<ul style="list-style-type: none"> <li>• Up to 80% of patients know that their disease is advanced or recurring</li> <li>• Patient may have looked at signs and symptoms and put them in a pattern</li> <li>• Give patient time and space to absorb bad news before looking at treatment</li> </ul>
Comments	<p>Health professional should always remember and accept that a relative will know the patient best          Patient should be allowed to have whom they wish at the consultation, and say if they are comfortable with the location          No empirical evidence          ¾ of all references from the author of the paper          No account of whether useful for patients          Hard to say if transferable to HF patients.</p>

Paper	Rogers, A. E., Addington-Hall, J. M., Abery, A. J., McCoy, A. S., Bulpitt, C., Coats, A. J., & Gibbs, J. S. 2000, "Knowledge and communication difficulties for patients with chronic heart failure: qualitative study", <i>BMJ</i> , vol. 321, no. 7261, pp. 605-607.
Description	
N=	
Intervention	
Outcomes	
Results	<ul style="list-style-type: none"> <li>• Good general description of heart failure</li> <li>• Many patients felt symptoms a fact of getting older</li> <li>• Half of participants wanted to discuss death and dying but it wasn't stimulated in consultation</li> <li>• Various why patients believed doctors did not tell them as much as they wished to hear</li> <li>• Participants reported difficulties getting to hospitals and clinic rooms</li> <li>• RCP recommendations for information and audio-visual provision</li> </ul>
Comments	<p>Low sample (n=30) – adopted to gain wide spectrum, appropriate for qualitative survey          Does not aim to produce findings that are that are necessarily representative for a larger population          Average age 69 years          67% men          LV ejection fraction 33.1%          Recruited from outpatient clinics and wards          Coding of responses duplicated</p>
Reference	242

Paper	Luniewski, M., Reigle, J., & White, B. 1999, "Card sort: an assessment tool for the educational needs of patients with heart failure", <i>American Journal of Critical Care</i> , vol. 8, no. 5, pp. 297-302.
Description	Observational patient survey
N=	
Intervention	
Outcomes	
Results	<ul style="list-style-type: none"> <li>• Participants with 12 + years of education rated information on disease and management as most important</li> <li>• 11 participants with no previous admission rated information on risk factors and future of disease most important</li> <li>• Class IV HF rated information on 'what's wrong with my heart', medication and side effects most important</li> <li>• Physicians matched any of pt's top 3 – 34% of the time</li> <li>• Nurses matched top one – 23% of the time</li> <li>• Nurses matched least important – 30% of the time</li> <li>• Sorting may help to stimulate educational needs debate</li> </ul>
Comments	<p>Blinding of duplication of preference sorting by health care professionals          Small sample (n=30); participants 33 – 82 years; 60% male          Participants reported that the number of cards was overwhelming          No measure of the spread of opinion          Sorting of patients preferences repeated by physician and by nurse to test matching          Is it sensible to analyse the matching preferences internally as these are based on what people predict          Significance of matches not stated</p>
Reference	233

Paper	Radziewicz, R. & Baile, W. F. 2001, "Communication skills: breaking bad news in the clinical setting.", <i>Oncology Nursing Forum</i> , vol. 28, no. 6, pp. 951-953.
Description	Opinion
N=	
Intervention	
Outcomes	
Results	<ul style="list-style-type: none"> <li>• Clinician fear that sharing unfavourable information may cause harm</li> <li>• Often lack of practice or skill</li> <li>• Well delivered information can in the long term lead to an increase in patient satisfaction, compliance and coping</li> <li>• SPIKES protocol - Stick to the facts               <ul style="list-style-type: none"> <li>- Don't push for details</li> <li>- Avoid giving advice of what to do</li> </ul> </li> </ul>
Comments	<p>Author written widely          Little use in terms of patient outcomes – compliance and quality of life          No empirical evidence</p>
Reference	237

## **Aetiology and prognosis**

### ***Experimental Studies***

Paper	Gadsboll, N., Torp-Pedersen, C., & Hoiland-Carlsen, P. F. 2001, "In-hospital heart failure, first-year ventricular dilatation and 10-year survival after acute myocardial infarction", <i>European Journal of Heart Failure</i> , vol. 3, no. 1, pp. 91-96.
Description	Cohort study
N=	n=57 Age =58yrs, Male =70% Denmark
Intervention	Retrospective study of left ventricular dilation and heart failure at base and one year post-MI Cardiac volume assessed by Radionuclide ventriculography. Heart failure assessed by physical examination
Outcomes	Death at 10 years
Results	<ul style="list-style-type: none"> <li>• LV dilation (p=0.04) and in-hospital heart failure (p=0.005) significantly associated with survival.</li> <li>• Only heart failure has an independent affect on survival when age added.</li> <li>• LV ejection fraction or LV volume have poor prognostic power at discharge, which gets poorer over time.</li> <li>• With heart failure being a good prognostic meter, another mechanism (other than LV dilation) must determine prognosis</li> </ul>
Comments	<ul style="list-style-type: none"> <li>• LV ejection fraction of LV volume poor prognostic power at discharge, and worse with time</li> <li>• Given HF is a good prognostic marker another mechanism than LV dilation must determine prognosis</li> </ul>

<b>Paper</b>	O'Connor, C. M., Hathaway, W. R., Bates, E. R., Leimberger, J. D., Sigmon, K. N., Kereiakes, D. J., George, B. S., Samaha, J. K., Abbottsmith, C. W., Candela, R. J., Topol, E. J., & Califf, R. M. 1997, "Clinical characteristics and long-term outcome of patients in whom congestive heart failure develops after thrombolytic therapy for acute myocardial infarction: development of a predictive model", <i>American Heart Journal</i> , vol. 133, no. 6, pp. 663-673.
<b>Description</b>	Cohort study
<b>N=</b>	n=1521 Age =57 years, Male =79%, Diabetes =17%, Hypertension =42% USA
<b>Intervention</b>	Comparison of various historical, physical and lab-tested variables, grouped into invasive and non-invasive.
<b>Outcomes</b>	Heart failure, oedema and death at one year post-MI
<b>Results</b>	<ul style="list-style-type: none"> <li>• Significant predictors of heart failure:</li> <li>• Odds Ratio: Diabetes = 1.36</li> <li>Ejection fraction = 0.76</li> <li>Age = 1.35</li> <li>Arterial pressure = 0.93</li> <li>Hypertension = 1.07</li> </ul>
<b>Comments</b>	<p>Tertiary care hospitals in the USA.</p> <p>Prevalence of heart failure remains high despite thrombolysis, catheterisation and aggressive therapy</p> <p>Indications can be used to focus monitoring and early therapy for HF.</p> <p>Poor discriminatory ability – concordance p=0.66.</p> <p>Post discharge heart failure due to other factors than infarct expansion were not included.</p>

Paper	Polak, J. F., Holman, B. L., Wynne, J., & Colucci, W. S. 1983, "Right ventricular ejection fraction: an indicator of increased mortality in patients with congestive heart failure associated with coronary artery disease", <i>Journal of the American College of Cardiology</i> , vol. 2, no. 2, pp. 217-224.
Description	Cohort study
N=	n=34 Age =58 yrs, Male =80%, Mean NYHA class =3.5 USA
Intervention	Does right ventricular ejection fraction determine survival in patients with heart failure secondary to atherosclerotic heart disease
Outcomes	Survival analysis via a health review by professional at 6, 12 and 18 months
Results	<ul style="list-style-type: none"> <li>• Mortality: RV fraction &lt;35% group = 71% compared with RV fraction normal group = 23% (p=0.02)</li> <li>• Survival analysis shows significance for preserved RV fraction at 6, 12 and 24 months p =0.05</li> </ul>
Comments	No clear indication of causal effect of reduced RV ejection fraction Specialist tertiary unit at a university hospital in Massachusetts

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<b>Paper</b>	Emanuelsson, H., Karlson, B. W., & Herlitz, J. 1994, "Characteristics and prognosis of patients with acute myocardial infarction in relation to occurrence of congestive heart failure", <i>European Heart Journal</i> , vol. 15, no. 6, pp. 761-768.
<b>Description</b>	Cohort study
<b>N=</b>	n=859, Heart failure cases n=438, Controls n=421 Age =71 years, Male =63%, Previous MI =26%, Hypertension =34% Sweden
<b>Intervention</b>	Risk factors: age, sex, history, symptoms, circulation tests, times
<b>Outcomes</b>	Outcome of in hospital mortality, and also of mortality at 1 year for those surviving admission
<b>Results</b>	<ul style="list-style-type: none"> <li>• CHF patients more likely to be male (<math>p&lt;0.01</math>), have diabetes (<math>p&lt;0.05</math>), and age a prognostic factor (<math>p&lt;0.001</math>)</li> <li>• Mortality during stay for patients who developed CHF 20% Vs 9% no CHF, and at one year CHF 39% Vs 17% no CHF (<math>p&lt;0.01</math>) for both</li> </ul>
<b>Comments</b>	Direct relation ship between severity of HF and mortality High incidence of CHF (~50%) due to elderly nature of cohort compared to other studies

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<b>Paper</b>	Zannad, F., Braincon, S., Juilliere, Y., Mertes, P. M., Villemot, J. P., Alla, F., & Virion, J. M. 1999, "Incidence, clinical and etiologic features, and outcomes of advanced chronic heart failure: the EPICAL Study. Epidemiologie de l'Insuffisance Cardiaque Avancee en Lorraine. [erratum appears in J Am Coll Cardiol 1999 Oct;34(4):1363]", <i>Journal of the American College of Cardiology</i> , vol. 33, no. 3, pp. 734-742.
<b>Description</b>	Cohort study
<b>N=</b>	n=499, CHD n=231, Non-CHD n=268 Age =65yrs, Male =69% France
<b>Intervention</b>	Heart failure patients sub-grouped into those with CHD aetiology and those without
<b>Outcomes</b>	Death at 6 – 24 months
<b>Results</b>	<ul style="list-style-type: none"> <li>• Relative risk of death for patients with HF 12.7 (10.9 – 14.4) adjusted for age and gender</li> <li>• Survival (but not readmission free survival) varied significantly with cause of CHF, and was greater in cardiomyopathy group than Coronary Heart Disease group</li> </ul>
<b>Comments</b>	Set in a range of hospital types across France Prognosis was only one factor of wider epidemiological paper

Paper	Hoffman, R. M., Psaty, B. M., & Kronmal, R. A. 1994, "Modifiable risk factors for incident heart failure in the coronary artery surgery study", <i>Archives of Internal Medicine</i> , vol. 154, no. 4, pp. 417-423.
Description	Case-control study
N=	n=2020, HF=339, no HF=1681 USA
Intervention	Prognostic factors of age, sex, LV function, Myocardial infarction
Outcomes	Incidence of HF up to 12 years
Results	<ul style="list-style-type: none"> <li>• A history of Myocardial Infarction demonstrates a relative risk of 1.32 (1.01 – 1.73) of developing HF</li> </ul>
Comments	<p>Hospital outpatients at university hospital, Seattle USA          Self reported cases were pooled with cases from medical records, but similar relative risks found in each group in separate regression analysis          Increased risk of MI survivors LV dysfunction derived from myocardial necrosis, ventricular aneurisms, or decreased compliance</p>

Paper	Spinar, J., Vitovec, J., Spac, J., Blaha, M., Spinarova, L., & Toman, J. 1996, "Non-invasive prognostic factors in chronic heart failure. One-year survival of 300 patients with a diagnosis of chronic heart failure due to ischemic heart disease or dilated cardiomyopathy", <i>International Journal of Cardiology</i> , vol. 56, no. 3, pp. 283-288.
Description	Case-control study
N=	n=300 Age =58yrs, Male =83%, NYHA II =60%, NYHA III =40% Czech Republic
Intervention	Many prognostic factors evaluated including medical history, Lab tests, and exercise tolerance tests
Outcomes	Mortality at 1 year
Results	<ul style="list-style-type: none"> <li>• Relative risk of death with abnormalities of the following                      Cardiothoracic ratio RR 3.64 (p&lt;0.001)                      Lung Changes RR 2.70 (p&lt;0.001)                      Plasma urea level RR 2.32 (p&lt;0.01)</li> </ul>
Comments	Study from Czech republic of outpatients at a university hospital No comparison to invasive tests Ejection Fraction not significant a poor correlation between heart size and LV function especially in patients with Ischaemic heart disease Exercise testing showed 10% difference between cases and controls but no statistical significance

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Paper	Kober, L., Torp-Pedersen, C., Ottesen, M., Burchardt, H., Korup, E., & Lyngborg, K. 1996, "Influence of age on the prognostic importance of left ventricular dysfunction and congestive heart failure on long-term survival after acute myocardial infarction. TRACE Study Group", <i>American Journal of Cardiology</i> , vol. 78, no. 2, pp. 158-162.
Description	Case-control study
N=	n=5987, Cases =1094, Controls n=4893 Denmark
Intervention	Presence of CHF and LV function (wall motion index =1.2 on echo) stratified by age
Outcomes	Death at 1 year and 3 years – all causes
Results	<ul style="list-style-type: none"> <li>• Age significant p=0.001, Risk ratio 1.064 (CI 1.059-1.070)</li> <li>• No significant interaction with CHF and age or LV function and age.</li> </ul>
Comments	To assess whether age modifies risk factors in heart failure for death. 27 cardiac centres, LV dysfunction defined as =1.2 on echo A trend for increased difference in mortality with and without congestive heart failure and LV dysfunction with increasing age

Paper	Galinier, M., Vialette, J. C., Fourcade, J., Cabrol, P., Dongay, B., Massabuau, P., Boveda, S., Doazan, J. P., Fauvel, J. M., & Bounhoure, J. P. 1998, "QT interval dispersion as a predictor of arrhythmic events in congestive heart failure. Importance of aetiology", <i>European Heart Journal</i> , vol. 19, no. 7, pp. 1054-1062.
Description	Case-control study
N=	n=200 France
Intervention	Presence of QT dispersion >80cms
Outcomes	Death, sub-grouped by: cardiac or sudden cardiac death; and sub-grouped by aetiology
Results	<ul style="list-style-type: none"> <li>All cause mortality QT Dispersion &gt;80cms, risk ratio of 2.17 (p=0.047) for dilated cardiomyopathy.</li> <li>1.59 (NS) for all HF patients, and</li> <li>1.15 (NS) for Ischemic heart disease</li> </ul>
Comments	To evaluate prognostic value of QT interval dispersion by heart failure aetiology In-patients at a university hospital In ischaemic heart disease QT not an independent predictor of all cause or cardiac mortality

<b>Paper</b>	Anguita, M., Arizon, J. M., Bueno, G., Latre, J. M., Sancho, M., Torres, F., Gimenez, D., Concha, M., & Valles, F. 1993, "Clinical and hemodynamic predictors of survival in patients aged &#60; 65 years with severe congestive heart failure secondary to ischemic or nonischemic dilated cardiomyopathy", <i>American Journal of Cardiology</i> , vol. 72, no. 5, pp. 413-417.
<b>Description</b>	Case-control study
<b>N=</b>	n=130 Age=45 years, male=89%, NYHA IV=91%, ischaemic dilated cardiomyopathy=40% Spain
<b>Intervention</b>	Various haemodynamic and clinical features including treatments and subgroups of ischaemic and idiopathic cardiomyopathy
<b>Outcomes</b>	Death and cardiac death (patients listed for transplant)
<b>Results</b>	<ul style="list-style-type: none"> <li>• Independent predictors of death: Systolic blood pressure (p=0.003) Inotropic requirement (p&lt;0.001) Captopril dosage (p=0.013)</li> <li>• Also clinical stabilisation after therapy with cardiac death</li> </ul>
<b>Comments</b>	No significant difference in idiopathic verses ischaemic aetiology with death Prognostic power of classic markers of arrhythmias, LV end systolic pressure and ejection fraction, serum sodium, functional class, and cardiothoracic index are less strong in advanced severe heart failure

<b>Paper</b>	Poulsen, S. H., Jensen, S. E., & Egstrup, K. 1999, "Longitudinal changes and prognostic implications of left ventricular diastolic function in first acute myocardial infarction.", <i>American Heart Journal</i> , vol. 137, no. 5, pp. 910-918.
<b>Description</b>	Case-control study
<b>N=</b>	n=58 Congestive heart failure=36%, control=64% Age=61, male=72%, diabetes=9%, hypertension=19% Denmark
<b>Intervention</b>	Various haemodynamic features from echocardiography
<b>Outcomes</b>	Occurrence of congestive heart failure and incidence of death
<b>Results</b>	<ul style="list-style-type: none"> <li>• LV ejection fraction not different in patients with or without congestive heart failure</li> <li>• Mitral E deceleration time &lt;104 ms (p&lt;0.001)</li> <li>• Independent predictors of congestive heart failure and death (p&lt;0.05)</li> </ul>
<b>Comments</b>	Limit 40–75 years to reduce confounding of age Patients with restrictive LV filling had more congestive heart failure, frequent re-admission, advanced NYHA and cardiac death. Serial assessment of LV diastolic function can help risk stratification post myocardial infarction

Paper	Omland, T., Aakvaag, A., Bonarjee, V. V., Caidahl, K., Lie, R. T., Nilsen, D. W., Sundsfjord, J. A., & Dickstein, K. 1996, "Plasma brain natriuretic peptide as an indicator of left ventricular systolic function and long-term survival after acute myocardial infarction. Comparison with plasma atrial natriuretic peptide and N-terminal proatrial natriuretic peptide.", <i>Circulation</i> , vol. 93, no. 11, pp. 1963-1969.
Description	Case-control study
N=	n=131 Age=67, Male=75%, Killip I=21%, Killip II=23% Norway
Intervention	Concentrations of ANP, N-ANP, BNP with 75 <sup>th</sup> percentile as cut off
Outcomes	Survival time, and subgroup of LV function by echocardiography
Results	<ul style="list-style-type: none"> <li>• All three peptides predict prognosis significantly (p&lt;0.002)</li> <li>• BNP is only a marker of prognosis beyond in-hospital clinical heart failure (p=0.00001)</li> <li>• ANP and N-ANP But not BNP significantly increased LV ejection fraction ≤45%</li> </ul>
Comments	<p>May not hold for peptide testing at times other than three days</p> <p>BNP only variable on multivariate regression to provide additional prognostic information beyond LV ejection fraction (p=0.021)</p> <p>Challenges the concept that prognostic value of natriuretic peptides is merely based on their ability to reflect global LV systolic function</p> <p>Inexpensive way to identify asymptomatic patients for ACE inhibitor therapy</p>

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Paper	Rask-Madsen, C., Jensen, G., Kober, L., Melchior, T., Torp-Pedersen, C., & Hildebrand, P. 1997, "Age-related mortality, clinical heart failure, and ventricular fibrillation in 4259 Danish patients after acute myocardial infarction", <i>European Heart Journal</i> , vol. 18, no. 9, pp. 1426-1431.
Description	Case-control study
N=	n=4259 Age - all ages =66, male =70%, diabetes =9%, hypertension =13% Denmark
Intervention	Age-grouped, fibrillation, history of diabetes, in-hospital heart failure (by Killip class)
Outcomes	Mortality in hospital, at 1, and 5 years
Results	<ul style="list-style-type: none"> <li>• At 1 year RR Age=1.04 (p=0.001)</li> <li>• Heart failure 2.49 to 5.72 depending on class (p=0.0001)</li> </ul>
Comments	Heart failure most important independent risk factor, even when each age strata analysed separately

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<b>Paper</b>	Gradman, A., Deedwania, P., Cody, R., Massie, B., Packer, M., Pitt, B., & Goldstein, S. 1989, "Predictors of total mortality and sudden death in mild to moderate heart failure", <i>Journal of the American College of Cardiology</i> , vol. 14, no. 3, pp. 564-570.
<b>Description</b>	Case-control study
<b>N=</b>	N=299 Age=57, male=83%, LV ejection fraction =25% USA, Canada, New Zealand
<b>Intervention</b>	Many, historical clinical and heart function variables
<b>Outcomes</b>	Total mortality at 16 months and also sudden death
<b>Results</b>	<ul style="list-style-type: none"> <li>• LV ejection fraction by angiography most powerful independent predictor of mortality (p&lt;0.006).</li> <li>• NYHA class (p&lt;0.02)</li> <li>• Non-ischaemic heart disease (p&lt;0.004) and ventricular tachycardia frequency (p&lt;0.008)</li> </ul>
<b>Comments</b>	Exercise capacity not independent marker of mortality

Paper	Bettencourt, P., Ferreira, A., Dias, P., Pimenta, J., Frioies, F., Martins, L., & Cerqueira-Gomes, M. 2000, "Predictors of prognosis in patients with stable mild to moderate heart failure", <i>Journal of Cardiac Failure</i> , vol. 6, no. 4, pp. 306-313.
Description	Case-control study
N=	n=139 Age=70, male=59%, NYHA II=83% Portugal
Intervention	Age, sex, blood pressure, NYHA class versus class I ischaemic versus non-ischaemic origin, LV function, deceleration of E wave time, exercise test, serum concentrations, BNP levels, atrial fibrillation
Outcomes	Mortality at final follow up, mean=541.4 days
Results	<ul style="list-style-type: none"> <li>• In multivariate analysis only</li> <li>• 6 minute walk test: correlation coefficient B=-0.008, (p=0.0001)</li> <li>• BNP: correlation coefficient B=0.0001, (p=0.002)</li> <li>• Deceleration time of E wave &lt;130 ms: correlation coefficient B=1.16, (p=0.01)</li> <li>• Atrial fibrillation: correlation coefficient B=1.16, (p=0.01)</li> <li>• Ischaemic origin correlation coefficient B=0.86, (p=0.02)</li> </ul>
Comments	<p>BNP was the only variable associated with poor prognosis (p=0.04) in patients with preserved ejection fraction (&gt;40%)</p> <p>Ischaemic origin of heart failure associated with survival</p> <p>With homogenous sample it was not surprising not to find a relationship between NYHA class and outcome</p> <p>Over 40 variables have been suggested to determine prognosis in various research</p> <p>May be changes in risk factor profiles over time</p>

<b>Paper</b>	Paolisso, G., Tagliamonte, M. R., Rizzo, M. R., Gambardella, A., Gualdiero, P., Lama, D., Varricchio, G., Gentile, S., & Varricchio, M. 1999, "Prognostic importance of insulin-mediated glucose uptake in aged patients with congestive heart failure secondary to mitral and/or aortic valve disease.", <i>American Journal of Cardiology</i> , vol. 83, no. 9, pp. 1338-1344.
<b>Description</b>	Case-control study
<b>N=</b>	n=174 Age=70, male=46%, LV ejection fraction=39% Italy
<b>Intervention</b>	IMGU good in top tertile of participants versus other prognostic factors
<b>Outcomes</b>	Survival at 24 months or to day of death
<b>Results</b>	<ul style="list-style-type: none"> <li>• IMGU prognostic factor for congestive heart failure. RR=1.6 (95% CI 1.2–2.6)</li> <li>• No predictive role for congestive heart failure when ventricular premature complexes added. RR=1.0 (0.6–1.3)</li> </ul>
<b>Comments</b>	No conclusive effect on outcome of mortality

Paper	Marantz, P. R., Tobin, J. N., Wassertheil-Smoller, S., Ahn, C., Steingart, R. M., & Wexler, J. P. 1992, "Prognosis in ischemic heart disease. Can you tell as much at the bedside as in the nuclear laboratory? ", <i>Archives of Internal Medicine</i> , vol. 152, no. 12, pp. 2433-2437.
Description	Case-control study
N=	n=170 New York
Intervention	1) Congestive heart failure by clinical exam plus basic tests for diagnosis as per Framingham study 2) LV ejection fraction<40 by ventrigulography
Outcomes	Mortality at 3 years
Results	<ul style="list-style-type: none"> <li>• 1) Congestive heart failure by Framingham diagnosis: (p=0.001)</li> <li>• 2) LV ejection fraction: (p=0.003)</li> <li>• Both are significantly related to mortality</li> <li>• Congestive heart failure provides independent prognostic information in groups with high or low LV ejection fraction</li> <li>• After controlling for age LV ejection fraction and other prognostic factors congestive heart failure was associated with a relative risk of 2.6 for mortality</li> </ul>
Comments	<p>LV ejection fraction relative risk of 0.98 or a 2% decrease in mortality with unit increment in LV ejection fraction  Given a cohort of suspected ischaemic heart disease is most relevant to patients with suspected coronary artery disease  Re-analysis with LV ejection fraction at 0.50 cut off gave a weaker predicative power confirming its additional value  Patients with congestive heart failure and preserved systolic function have higher mortality than those with same LV ejection fraction without congestive heart failure (p=0.02)</p>

**Non-experimental studies**

Paper	Kirk, V., Bay, M., Hassager, C., Nielsen, H., Parner, J., Herzog, T., Boesgaard, S., & Aldershvile, J. 2000, "Plasma level of N Terminal-pro-BNP predicts 1 year mortality", <i>European Journal of Heart Failure</i> , vol. 2 (0), no. Suppl. 1, pp. 62-63.
Description	Abstract of case-control study
N=	
Intervention	
Outcomes	
Results	<ul style="list-style-type: none"> <li>• Age ~71yrs</li> <li>• Mortality in 1 year 18.4%</li> <li>• pNT-proBNP, and reduced LV ejection fraction have risks of mortality (p&lt;0.0001)</li> <li>• With logistic regression pNT-proBNP remained an independent predictor of 1 year mortality (p&lt;0.001) even taking sex and LV ejection fraction into account</li> <li>• Can predict 1 year mortality in hospitalised patients with or without HF</li> </ul>
Comments	A case control study of patients with acute myocardial Infarction n=2230 Denmark Outcome of mortality at 1 year Prognostic variable of pNT-proBNP by quartiles of level tested in the sample Sample of consecutive admissions Comparison to LV ejection fraction

Paper	Mandinov, L., Eberli, F. R., Seiler, C., & Hess, O. M. 2000, "Diastolic heart failure.", <i>Cardiovascular Research</i> , vol. 45, no. 4, pp. 813-825.
Description	Review
N=	
Intervention	
Outcomes	
Results	<ul style="list-style-type: none"> <li>• Lower annual mortality rate with diastolic failure (5-12%) compared to (15-30%) with systolic dysfunction (depending on the severity of dysfunction)</li> <li>• Typically seen in patients with hypertension and hypertrophic or restrictive cardiomyopathy</li> <li>• Hypertensive heart disease can progress to diastolic dysfunction and finally to overt heart failure</li> <li>• Is the earliest sign of LV dysfunction in the acute phase of MI and maybe prognostic significance for LV remodelling with enhanced morbidity and mortality</li> </ul>
Comments	<p>75 references          Swiss based editorial team          A wider paper covering diagnosis and treatment also          Text well linked to citations          Solely focussed on diastolic HF</p>

**Support for patient and carers**

***Non-experimental studies***

Paper	Department of Health, N. E. Information for health an information strategy for the modern NHS 1998-2005 a national strategy for local implementation. -123. 1998. London.
Description	Guidelines
N=	
Intervention	
Outcomes	
Results	<p>Improving public access to information an health and health services</p> <ul style="list-style-type: none"> <li>• Improving access to information on health services should also promote a healthier population better to look after themselves</li> <li>• Carers or relatives or friends seek information on behalf of others ..... The provision of public information should be sensitive to the different needs of different groups and the various ways people seek health information</li> <li>• NHS Direct will provide 24 hour access to telephone information and nursing advice</li> <li>• Steps will be taken to ensure public access to the appropriate parts of the National Electronic Library for Health</li> </ul>
Comments	A policy document without any direct evidence from literature
Reference	228

Paper	Department of Health. Caring about Carers a national strategy for carers. -97. 1999. Wetherby.
Description	Guidelines
N=	
Intervention	
Outcomes	
Results	<p>Information for carers</p> <ul style="list-style-type: none"> <li>• Carers are a diverse group of individuals. Information needs to be relevant to each individual carer. So it must take account of their particular circumstances and their main needs. Carers needs can change over time</li> </ul> <p>Information on health care</p> <ul style="list-style-type: none"> <li>• Carers need good information on the health needs and treatment of the person they are caring for – especially on medication: when to take it, and recognising any side effects arising from it. They need information to allow them to deal with the symptoms of some illnesses and to recognise when they should urgently ask for professional help, and where to get such help</li> <li>• Many carers have expressed concern about the lack of recognition of the role of the carer in the hospital setting. At the time of hospital discharge, carers must be fully informed and involved in the planning of future care of the patient, so that assumptions are not made about their ability or willingness to care.</li> </ul>
Comments	A document outlining a national strategy, informed by reference to other policy documents and carer organisations

Paper	Twigg, J., Atkins, K., & Perring, C. 1990, <i>Review of carers and services</i> Social Policy Research Unit: HMSO.
Description	Review
N=	
Intervention	
Outcomes	
Results	<ul style="list-style-type: none"> <li>• Some aspects of carer support concentrate exclusively in practicalities of care</li> <li>• Training courses should be resourced through existing, established carer groups rather than developing discrete programmes</li> <li>• There has been an informal care unit established by the Kings Fund.</li> <li>• Informed carers are only useful to patients if they feel it is appropriate for them to use this information, without requiring permission to use it.</li> </ul>
Comments	<p>Chapter of a book regarding the role of Carers in medicine          Not Heart failure specific          No evidence for outcomes of improves patient status.          Not referenced with original experimental studies.</p>