Appendix D. Risk of Bias Assessments for Included Studies

Table D1. Risk of bias evaluations and rationale

| **Author, Year****Trial Namea**  | **Randomi-zation Method Adequate?**  | **Allo-cation Conceal-ment Ad-equate?** | **Are Groups Similar at Base-line?**  | **Outcome Asse-ssors Blinded?** | **Overall Attrition****Differential Attrition** | **Does High Attrition Rate Raise Concern for Bias?** | **Inter-vention Fidelity Ad-equate?** | **ITT Ana-lysis?****Appro-priate Method for Handling Missing Data?** | **Utiliz-ation Out-comes: Valid, Reliable, Con-sistent?** | **Health and Social Out-comes: Valid, Reliable, Cons-istent?** | **Risk of Bias****Rationale for Any High or Unclear Risk of Bias Ratings** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Albert et al., 20071 | Yes | Yes | No | NR/CND | 19% lost to follow-up; 29% died or were lost to follow-up1.1% loss to follow-up; 6% differential attrition when counting those who either died or were lost to follow-up | Yes | Yes | YesNo | NR/CND | NR/CND | HighBaseline characteristics not similar (more women in the usual care group, more smokers in the intervention group). Inadequate method of handling missing data (completer’s analysis). The authors did not describe how mortality and health utilization measures were ascertained.  |
| Aldamiz-Echevarría Iraúrgui et al,, 20072 | Yes | Yes | Yes | NR/CND | 0%0% | No | NR/CND | YesNA | Yes | Yes | Medium |

| Table D1. Risk of bias evaluations and rationale (continued) |
| --- |
| **Author, Year****Trial Namea**  | **Randomi-zation Method Adequate?**  | **Allo-cation Conceal-ment Ad-equate?** | **Are Groups Similar at Base-line?**  | **Outcome Asse-ssors Blinded?** | **Overall Attrition****Differential Attrition** | **Does High Attrition Rate Raise Concern for Bias?** | **Inter-vention Fidelity Ad-equate?** | **ITT Ana-lysis?****Appro-priate Method for Handling Missing Data?** | **Utiliz-ation Out-comes: Valid, Reliable, Con-sistent?** | **Health and Social Out-comes: Valid, Reliable, Cons-istent?** | **Risk of Bias****Rationale for Any High or Unclear Risk of Bias Ratings** |
| Angermann et al., 20123 | Yes | NR/CND | Yes | Yes | 0% for mortality and utilization outcomes; no QoL available for those who died or did not complete a follow-up phone call (58%)NA for mortality/ utilization; unclear for QoL | No | NR/CND | YesYes | Yes | Yes | Medium |
| Barth et al., 20014 | NR/CND | NR/CND | Yes | NR/CND | 0%NA | No | NR/CND | Unclear or NRNA | Unclear | Yes | HighHigh risk of selection bias; unclear how the 34 participants were recruited from the overall population. Methods used to measure utilization outcomes were not described. |
| Benatar et al., 20035 | NR/CND | NR/CND | Yes, for age, sex, race, NYHA, EF; higher propor-tions with DM, ACEI use, BB use in NTM group | NR/CND | 0% (3 ms)0% (3 ms) | No | NR/CND | Unclear or NRNA for 3 ms; NR beyond that | NR/CND | Yes | Unclear (utilization outcomes); Medium (QoL)Rated unclear for utilization outcomes; ascertainment NR. Measures for QoL, psychological distress, and self-efficacy more clearly described and used validated measures. Masking of outcome assessors NR. Methods or randomization and allocation concealment NR. Although study reports that all randomized patients completed at least 3 months, no flow chart or data included to report attrition over the course of the study. Whether ITT analysis used NR. Unclear how missing data handled (and how much there was) beyond 3 months. Potential COI with senior author as developer of the hardware and software. |
| Cabezas et al., 20066 | NR/CND | NR/CND | Yes | NR/CND | 0%; no QoL outcomes for 13% who died at 6 months0%; 10% when including deaths at 6 months | No | NR/CND | Unclear or NRNA | Yes | Yes | Medium |
| Dar et al., 20097 | Yes | Yes | Yes | NR/CND | 0%0%  | No  | Yes | YesYes | Yes | Yes | Medium |
| Davis et al., 20128 | NR/CND | NR/CND | Yes | Yes | 13%0% | No | NR/CND | YesYes | Yes | Yes | Medium |
| Dendale et al., 20129 | NR/CND | Yes | Yes | Yes | 0%0% | No | NR/CND | YesNA | NR | Yes | UnclearUnclear fidelity- study reports that 76% of the GPs logged into the website at least once during the study. Unclear if the GPs could receive patient alerts outside of the website. It is unclear how utilization outcomes were measured; no specific information is given.  |
| Domingues et al., 201110 | NR/CND | NR/CND | Yes | NR/CND | 4%3% | No | Yes | YesNo | Yes | NA | Medium |
| Ducharme et al., 200511 | Yes | Yes | Yes | Yes for QoL, No for utilization outcomes. | 0%0% | NA | Yes | YesNA | Yes | Yes | Low |
| Duffy et al., 201012 | No | No | NR/CND | NR/CND | NR/CNDNR/CND | Unclear or NR | NR/CND | Unclear or NRNA | unclear | Yes | HighSample characteristics not given for separate arms; in the text, noted that there were no differences. Unclear if the database used to capture healthcare utilization is comprehensive or based on only nurse input of known utilization. Control arm poorly described and received nearly as many home visits as the intervention group. |
| Dunagan et al., 200513 | Yes | NR/CND | Yes | Yes | 0% for utilization outcomes; see Risk of bias/Rationale for rating column for QoL0% for utilization outcomes; see Risk of bias/Rationale for rating column for QoL | No | NR/CND | YesNA for utilization outcomes; no for QoL outcomes | Yes | Yes | Medium |
| Ekman et al., 199814 | Yes | Yes | For most characteristics, however more patients in usual care group had AF | NR/CND | 0%NA | No | NR/CND | YesNA | Yes | Yes | Medium |
| Goldberg et al., 200315 | NR/CND | NR/CND | Yes | Yes | 11.4%CND, but article reports that there was no difference between groups in % of patients who failed to complete 6 months | No | Yes | YesNR/CND for utilization (likely censored); completers analysis for health and social outcomes | Yes | Yes | Medium |
| Holland et al., 200716 | Yes | NR/CND | No | NR/CND | 1%0% | No | Yes | YesNA | Yes | Yes | Medium |
| Jaarsma et al., 199917 | NR/CND | NR/CND | Yes | No | 5% "non-response" rate; 17% of sample died0% for loss to follow-up | No | NR/CND | YesUnclear | Yes | Yes | Medium |
| Jerant et al., 200118Jerant et al., 200319 | Yes | Yes | Yes | No | 0% 0% | No | No | YesNA | Yes | Yes | HighSmall study (37 participants) that suffers from concerns regarding intervention fidelity. Authors note that at least one technical problem affected 76% of all telemonitoring encounters. |
| Kasper et al., 200220 | Yes | NR/CND | Yes | Yes | 0%0% | No | Yes | YesNA | Yes | Yes | Low |
| Kimmelstiel et al., 200421 | NR/CND | NR/CND | Yes | Yes | 4.5% due to death at 12 weeksNR | No | Yes | YesNA | Yes | Yes | Medium |
| Koelling et al., 200522 | Yes | Yes | Yes | Yes | 0.0%0.0% | No | Yes | YesNA | Yes | Yes | Low |
| Kwok et al., 200723 | Yes | NR/CND | No | Yes for functional status; unclear for utilization rates | 2.8%1.5% | No | NR/CND | YesNR/CND | Yes | Yes | Medium |
| Laramee et al., 200324RCT | Yes | NR/CND | Yes, for most, but some differences for PVD, class I and II NYHA, prior CHF admis-sions, and read-mission risk factors | No | 8.7%8.8% | No | NR/CND | YesNo | Yes | Yes | Medium.  |
| Linne et al., 200625 | Yes | Yes | Yes, for most characteris-tics | Yes | 2.6%1.4% | No | NR/CND | YesNR/CND | NR/CND | NR/CND | UnclearUnclear risk of bias, mainly due to inadequate reporting of information to allow complete assessment of risk of measurement bias. Groups similar at baseline Unclear how missing data handled, but very few subjects had missing outcome data (2/108 and 4/122 refused to participate further in the control and intervention groups, respectively), so likely minimal potential impact. They were likely censored in the survival analysis. Unclear risk of measurement bias: authors only report that they used "an administrative system, PAS, ... to verify all-cause readmissions and deaths within 6 months from discharge." Study conducted in Sweden, and no additional information about validity and reliability of that system’s readmission and death information. |
| Liu et al., 201226 | Yes | NR/CND | Yes | Yes | 0.00%0% | No | NR/CND | YesNA | Yes | Yes | Low |
| McDonald et al., 200127McDonald et al., 200228Ledwidge et al., 200329 | NR/CND | NR/CND | Yes | NR/CND | 0%0% | No | NR/CND | YesNA | Unclear | Unclear for mortality; Yes for social outcomes | UnclearUnclear measurement bias. Method of outcome assessment (measurement of mortality and utilization) not described and unclear. |
| Naylor et al., 200430 | Yes | Yes | Yes | Yes | 20.5%1.4% | No | NR/CND | YesYes | Yes | Yes | Low |
| Nucifora et al., 200631 | NR/CND | NR/CND | No | NR/CND | 0% lost to follow-up; 11% died0% NA for missing data; 6% for deaths | No | NR/CND | YesYes | Yes | Yes | Medium. |
| Oddone et al., 199932 | NR/CND | NR/CND | Yes | Yes | NR/CNDNR | Unclear or NR | Yes | Unclear or NRUnclear or NR | Yes | Yes | Medium |
| Pekmezaris et al., 201233 | Yes | NR/CND | Yes | NR/CND | 0%0% | No | Yes | YesYes | Yes | NA | Medium |
| Pugh et al., 200134 | NR/CND | NR/CND | Yes | NR/CND | 10% due to withdrew; 29% died or withdrew1% | No | NR/CND | Unclear or NRNo | Unclear | Yes | HighPatients who withdrew or who died appear to be excluded from the readmission/ utilization analysis. Unclear if 11 patients who died had also experienced a readmission or ER visit during study. NR whether those who withdrew were contacted and asked about health care utilization. Randomization and allocation concealment not described. |
| Rainville et al., 199935 | Yes | NR/CND | No | NR/CND | 14% died; no loss to follow-up reported after randomization0% for loss to follow-up; 17% for death | Yes | NR/CND | Unclear or NRNo | Yes | Yes | Medium |
| Rich et al., 199336 | NR/CND | NR/CND | Yes | NR/CND | 0%0% | No | NR/CND | Unclear or NRNA | Yes | NA | Medium |
| Rich et al., 199537 | Yes | Yes | No | NR/CND | 0%0% | No | NR/CND | YesNA | Unclear | Yes | Medium |
| Riegel et al., 200238 | No | NR/CND | No | NR/CND | 0% for outcomes of interest (acute care resources)NA | No | Yes | Unclear or NRNA | Yes | NA | Medium |
| Riegel et al., 200439 | Yes | NR/CND | No | NR/CND | 31.8%1.5% | Yes | Yes | Yes for utilization outcome; no for self-care/social outcomes (those were completer's analysis)No | NR/CND | NR/CND for mortality; Yes for self-care measures | HighHigh risk of selection bias, measurement bias, and confounding. Over 30% of sample dropped out, high attrition; methods of handling missing data NR for utilization outcomes. Unclear how utilization outcomes were ascertained, and unclear how complete data was for utilization outcomes (focus of study on self-care and social support outcomes). Masking of outcome assessors NR. Several baseline differences between groups: fewer married in intervention group, fewer retired, fewer with stage 3/4 NYHA when collapsing those groups (57% vs. 69%), fewer with COPD and history of MI. |
| Riegel et al., 200640 | NR/CND | Yes | Yes | Yes | 0.0%0.0% | No | Yes | YesNA | Yes | Yes | Medium |
| Schwarz et al., 200841 | NR/CND | NR/CND | No | NR/CND | 21% including death, nursing home and withdrawal from study; appears that mortality and utilization outcomes were available for full sample.8% | No | Yes | YesYes | Yes | Yes | Medium |
| Sethares et al., 200442 | NR/CND | NR/CND | Yes | Mixed (yes for readmis-sion, no for QoL for the inter-vention group) | 20.5%CND | Yes | NR/CND | NoNo | Yes | Yes | HighHigh risk of selection bias and confounding. Completers analysis, 18/88 post-randomization exclusions due to death (10) or missing data (8); analysis only included 70 subjects who did not die and not lost to follow-up. Unclear why more detailed assessments of the 10 deaths not included in analysis. No reporting of which groups the 18 post-randomization exclusions were in to allow determination of differential attrition. The  |
| Sethares et al., 200442 (continued) |  |  |  |  |  |  |  |  |  |  | 10 deaths, if adequately assessed for readmission and attributed to appropriate study groups, could significantly change results, since only 6 people readmitted in intervention group and 12 in control group. Inadequate handling of missing data; methods of randomization and allocation concealment NR |
| Stewart et al., 199843 | No | NR/CND | Yes | NR/CND | NR/CND; appears to be mortality and utilization outcomes on all participantsNA | Unclear or NR | Yes | YesNA | Yes | Yes | Medium |
| Stewart et al., 199944 | Yes | Yes | Yes | Yes | NR/CND; 10% of the intervention group withdrew and unclear how missing data handled10% of intervention group withdrew; attrition NR for usual care group | No | NR/CND | YesUnclear | Yes | Yes | Medium |
| Stromberg et al., 200345 | Yes | Yes | Yes, for most (but more with HTN in intervene-tion group and fewer with DM) | Yes | 0% lost to follow-up; 15% died before 3 months0% lost to follow-up; 18% for deaths by 3 months | No | Yes | YesYes | Yes | Yes | LowPatients who died were censored in analysis. |
| Thompson et al., 200546 | NR/CND | NR/CND | No | Yes | 0% for utilization outcomes; 57% for QoL0% for utilization outcomes; NR/CND for QoL | Yes (QoL only) | Yes | YesNo (no for QoL only) | Yes | Yes | HighStudy used cluster randomization according to treating GP, resulting in important baseline differences between groups; analysis done at patient level. Higher proportion of diabetes (27% vs. 14%) and lower proportion of medication use for ACEIs, BBs, Aspirin, and warfarin at time of hospital discharge for control group than intervention group. Thus, control group at higher risk of readmissions and death than intervention group. QoL outcome data have high risk of bias due to very high attrition, with fewer than half of subjects returning questionnaire. |
| Triller et al., 200847 | Yes | Yes | Yes | NR/CND | 0%NA | No | No | YesNA | Unclear  | No | Unclear No information provided on method used to measure readmission and other utilization outcomes. Neither type of QoL measured nor QoL scale used are described, making validity of those data unclear. Only 53% of sample received full 3 visits from a pharmacist. Unclear fidelity. |
| Tsuyuki et al., 200448 | Yes | NR/CND | Yes | No | 2.5% 0.8% | No | NR/CND | YesNR/CND | Yes | Yes | Medium |
| Wakefield et al., 200849Wakefield et al., 200950 | NR/CND | NR/CND | Yes | NR/CND | 0% for readmission and mortality  | No | Unclear | YesNA | Yes | Yes | Medium |
| Woodend et al., 200851 | NR/CND | NR/CND | No | NR/CND | NR/CND at eligible time pointsNR/CND | Unclear or NR | NR/CND | YesNR/CND | No | unclear | HighFewer patients in telemonitoring group had angina compared with usual care. Loss to follow-up and death reported for 12 months, unclear if these were included in data analysis for earlier time points or excluded. At 12 months, 22% of the intervention group also received home visits. Utilization outcomes assessed by self-report only. Not clear if attempt made to account for utilization among those lost to follow-up or who were later found to have died. |

a Three studies involved crossover designs or contamination: Duffy et al., 2010,12 Pekmezaris et al., 201233 and Woodend et al., 2008.51

Abbreviations: ACEI = ACE inhibitor; AF = atrial fibrillation; BB = beta-blocker; CND = cannot determine; COI = conflict of interest; COPD = chronic obstructive pulmonary disease; DM = diabetes mellitus; EF = ejection fraction; ER = emergency room; GP = general practitioner; CHF = congestive heart failure; HTN = hypertension; ITT = intent-to-treat; MI = myocardial infarction; Ms = months; NA = not applicable; NR = not reported; NTM = no telemonitoring; NYHA = New York Heart Association functional classification; PVD = peripheral vascular disease; QoL = quality of life; RoB = risk of bias; vs. = versus

Appendix D References

1. Albert NM, Buchsbaum R, Li J. Randomized study of the effect of video education on heart failure healthcare utilization, symptoms, and self-care behaviors. Patient Educ Couns. 2007 Dec;69(1-3):129-39. PMID: 17913440.

2. Aldamiz-Echevarría Iraúrgui B, Muñiz J, Rodríguez-Fernández JA, et al. [Randomized controlled clinical trial of a home care unit intervention to reduce readmission and death rates in patients discharged from hospital following admission for heart failure]. Rev Esp Cardiol. 2007(9):914-22. PMID: CN-00612373.

3. Angermann CE, Stork S, Gelbrich G, et al. Mode of action and effects of standardized collaborative disease management on mortality and morbidity in patients with systolic heart failure: the Interdisciplinary Network for Heart Failure (INH) study. Circ Heart Fail. 2012 Jan;5(1):25-35. PMID: 21956192.

4. Barth V. A nurse-managed discharge program for congestive heart failure patients: outcomes and costs. Home Health Care Manag Pract. 2001(6):436-43. PMID: CN-00773514.

5. Benatar D, Bondmass M, Ghitelman J, et al. Outcomes of chronic heart failure. Arch Intern Med. 2003 Feb 10;163(3):347-52. PMID: 12578516.

6. Lopez Cabezas C, Falces Salvador C, Cubi Quadrada D, et al. Randomized clinical trial of a postdischarge pharmaceutical care program vs regular follow-up in patients with heart failure. Farm Hosp. 2006 Nov-Dec;30(6):328-42. PMID: 17298190.

7. Dar O, Riley J, Chapman C, et al. A randomized trial of home telemonitoring in a typical elderly heart failure population in North West London: results of the Home-HF study. Eur J Heart Fail. 2009(3):319-25. PMID: CN-00681894.

8. Davis KK, Mintzer M, Dennison Himmelfarb CR, et al. Targeted intervention improves knowledge but not self-care or readmissions in heart failure patients with mild cognitive impairment. Eur J Heart Fail. 2012 Sep;14(9):1041-9. PMID: 22736737.

9. Dendale P, De Keulenaer G, Troisfontaines P, et al. Effect of a telemonitoring-facilitated collaboration between general practitioner and heart failure clinic on mortality and rehospitalization rates in severe heart failure: the TEMA-HF 1 (TElemonitoring in the MAnagement of Heart Failure) study. Eur J Heart Fail. 2012 Mar;14(3):333-40. PMID: 22045925.

10. Domingues FB, Clausell N, Aliti GB, et al. Education and telephone monitoring by nurses of patients with heart failure: randomized clinical trial. Arq Bras Cardiol. 2011 Mar;96(3):233-9. PMID: 21308343.

11. Ducharme A, Doyon O, White M, et al. Impact of care at a multidisciplinary congestive heart failure clinic: a randomized trial. CMAJ. 2005 Jul 5;173(1):40-5. PMID: 15997043.

12. Duffy JR, Hoskins LM, Dudley-Brown S. Improving outcomes for older adults with heart failure: a randomized trial using a theory-guided nursing intervention. J Nurs Care Qual. 2010 Jan-Mar;25(1):56-64. PMID: 19512945.

13. Dunagan WC, Littenberg B, Ewald GA, et al. Randomized trial of a nurse-administered, telephone-based disease management program for patients with heart failure. J Card Fail. 2005 Jun;11(5):358-65. PMID: 15948086.

14. Ekman I, Andersson B, Ehnfors M, et al. Feasibility of a nurse-monitored, outpatient-care programme for elderly patients with moderate-to-severe, chronic heart failure. Eur Heart J. 1998 Aug;19(8):1254-60. PMID: 9740348.

15. Goldberg LR, Piette JD, Walsh MN, et al. Randomized trial of a daily electronic home monitoring system in patients with advanced heart failure: the Weight Monitoring in Heart Failure (WHARF) trial. Am Heart J. 2003 Oct;146(4):705-12. PMID: 14564327.

16. Holland R, Brooksby I, Lenaghan E, et al. Effectiveness of visits from community pharmacists for patients with heart failure: HeartMed randomised controlled trial. BMJ. 2007 May 26;334(7603):1098. PMID: 17452390.

17. Jaarsma T, Halfens R, Huijer Abu-Saad H, et al. Effects of education and support on self-care and resource utilization in patients with heart failure. Eur Heart J. 1999 May;20(9):673-82. PMID: 10208788.

18. Jerant AF, Azari R, Nesbitt TS. Reducing the cost of frequent hospital admissions for congestive heart failure: a randomized trial of a home telecare intervention. Med Care. 2001 Nov;39(11):1234-45. PMID: 11606877.

19. Jerant AF, Azari R, Martinez C, et al. A randomized trial of telenursing to reduce hospitalization for heart failure: patient-centered outcomes and nursing indicators. Home Health Care Serv Q. 2003;22(1):1-20. PMID: 12749524.

20. Kasper EK, Gerstenblith G, Hefter G, et al. A randomized trial of the efficacy of multidisciplinary care in heart failure outpatients at high risk of hospital readmission. J Am Coll Cardiol. 2002 Feb 6;39(3):471-80. PMID: 11823086.

21. Kimmelstiel C, Levine D, Perry K, et al. Randomized, controlled evaluation of short- and long-term benefits of heart failure disease management within a diverse provider network: the SPAN-CHF trial. Circulation. 2004 Sep 14;110(11):1450-5. PMID: 15313938.

22. Koelling TM, Johnson ML, Cody RJ, et al. Discharge education improves clinical outcomes in patients with chronic heart failure. Circulation. 2005 Jan 18;111(2):179-85. PMID: 15642765.

23. Kwok T, Lee J, Woo J, et al. A randomized controlled trial of a community nurse-supported hospital discharge programme in older patients with chronic heart failure. J Clin Nurs. 2008 Jan;17(1):109-17. PMID: 18088263.

24. Laramee AS, Levinsky SK, Sargent J, et al. Case management in a heterogeneous congestive heart failure population: a randomized controlled trial. Arch Intern Med. 2003 Apr 14;163(7):809-17. PMID: 12695272.

25. Linne AB, Liedholm H. Effects of an interactive CD-program on 6 months readmission rate in patients with heart failure - a randomised, controlled trial [NCT00311194]. BMC Cardiovasc Disord. 2006;6:30. PMID: 16796760.

26. Liu MH, Wang CH, Huang YY, et al. Edema index-guided disease management improves 6-month outcomes of patients with acute heart failure. Int Heart J. 2012;53(1):11-7. PMID: 22398670.

27. McDonald K, Ledwidge M, Cahill J, et al. Elimination of early rehospitalization in a randomized, controlled trial of multidisciplinary care in a high-risk, elderly heart failure population: the potential contributions of specialist care, clinical stability and optimal angiotensin-converting enzyme inhibitor dose at discharge. Eur J Heart Fail. 2001 Mar;3(2):209-15. PMID: 11246059.

28. McDonald K, Ledwidge M, Cahill J, et al. Heart failure management: multidisciplinary care has intrinsic benefit above the optimization of medical care. J Card Fail. 2002 Jun;8(3):142-8. PMID: 12140806.

29. Ledwidge M, Barry M, Cahill J, et al. Is multidisciplinary care of heart failure cost-beneficial when combined with optimal medical care? Eur J Heart Fail. 2003(3):381-9. PMID: CN-00456908.

30. Naylor MD, Brooten DA, Campbell RL, et al. Transitional care of older adults hospitalized with heart failure: a randomized, controlled trial. J Am Geriatr Soc. 2004 May;52(5):675-84. PMID: 15086645.

31. Nucifora G, Albanese MC, De Biaggio P, et al. Lack of improvement of clinical outcomes by a low-cost, hospital-based heart failure management programme. J Cardiovasc Med (Hagerstown). 2006 Aug;7(8):614-22. PMID: 16858241.

32. Oddone EZ, Weinberger M, Giobbie-Hurder A, et al. Enhanced access to primary care for patients with congestive heart failure. Veterans Affairs Cooperative Study Group on Primary Care and Hospital Readmission. Eff Clin Pract. 1999 Sep-Oct;2(5):201-9. PMID: 10623052.

33. Pekmezaris R, Mitzner I, Pecinka KR, et al. The impact of remote patient monitoring (telehealth) upon Medicare beneficiaries with heart failure. Telemed J E Health. 2012 Mar;18(2):101-8. PMID: 22283360.

34. Pugh LC, Havens DS, Xie S, et al. Case management for elderly persons with heart failure: the quality of life and cost outcomes. Medsurg Nurs. 2001;10(2):71-8.

35. Rainville EC. Impact of pharmacist interventions on hospital readmissions for heart failure. Am J Health Syst Pharm. 1999 Jul 1;56(13):1339-42. PMID: 10683133.

36. Rich MW, Vinson JM, Sperry JC, et al. Prevention of readmission in elderly patients with congestive heart failure: results of a prospective, randomized pilot study. J Gen Intern Med. 1993 Nov;8(11):585-90. PMID: 8289096.

37. Rich MW, Beckham V, Wittenberg C, et al. A multidisciplinary intervention to prevent the readmission of elderly patients with congestive heart failure. N Engl J Med. 1995 Nov 2;333(18):1190-5. PMID: 7565975.

38. Riegel B, Carlson B, Kopp Z, et al. Effect of a standardized nurse case-management telephone intervention on resource use in patients with chronic heart failure. Arch Intern Med. 2002 Mar 25;162(6):705-12. PMID: 11911726.

39. Riegel B, Carlson B. Is individual peer support a promising intervention for persons with heart failure? J Cardiovasc Nurs. 2004 May-Jun;19(3):174-83. PMID: 15191260.

40. Riegel B, Carlson B, Glaser D, et al. Randomized controlled trial of telephone case management in Hispanics of Mexican origin with heart failure. J Card Fail. 2006 Apr;12(3):211-9. PMID: 16624687.

41. Schwarz KA, Mion LC, Hudock D, et al. Telemonitoring of heart failure patients and their caregivers: a pilot randomized controlled trial. Prog Cardiovasc Nurs. 2008 Winter;23(1):18-26. PMID: 18326990.

42. Sethares KA, Elliott K. The effect of a tailored message intervention on heart failure readmission rates, quality of life, and benefit and barrier beliefs in persons with heart failure. Heart Lung. 2004 Jul-Aug;33(4):249-60. PMID: 15252415.

43. Stewart S, Pearson S, Horowitz JD. Effects of a home-based intervention among patients with congestive heart failure discharged from acute hospital care. Arch Intern Med. 1998 May 25;158(10):1067-72. PMID: 9605777.

44. Stewart S, Marley JE, Horowitz JD. Effects of a multidisciplinary, home-based intervention on unplanned readmissions and survival among patients with chronic congestive heart failure: a randomised controlled study. Lancet. 1999 Sep 25;354(9184):1077-83. PMID: 10509499.

45. Stromberg A, Martensson J, Fridlund B, et al. Nurse-led heart failure clinics improve survival and self-care behaviour in patients with heart failure: results from a prospective, randomised trial. Eur Heart J. 2003 Jun;24(11):1014-23. PMID: 12788301.

46. Thompson DR, Roebuck A, Stewart S. Effects of a nurse-led, clinic and home-based intervention on recurrent hospital use in chronic heart failure. Eur J Heart Fail. 2005 Mar 16;7(3):377-84. PMID: 15718178.

47. Triller DM, Hamilton RA. Effect of pharmaceutical care services on outcomes for home care patients with heart failure. Am J Health Syst Pharm. 2007 Nov 1;64(21):2244-9. PMID: 17959576.

48. Tsuyuki RT, Fradette M, Johnson JA, et al. A multicenter disease management program for hospitalized patients with heart failure. J Card Fail. 2004 Dec;10(6):473-80. PMID: 15599837.

49. Wakefield BJ, Ward MM, Holman JE, et al. Evaluation of home telehealth following hospitalization for heart failure: a randomized trial. Telemed J E Health. 2008 Oct;14(8):753-61. PMID: 18954244.

50. Wakefield BJ, Holman JE, Ray A, et al. Outcomes of a home telehealth intervention for patients with heart failure. J Telemed Telecare. 2009;15(1):46-50. PMID: 19139220.

51. Woodend AK, Sherrard H, Fraser M, et al. Telehome monitoring in patients with cardiac disease who are at high risk of readmission. Heart Lung. 2008 Jan-Feb;37(1):36-45. PMID: 18206525