**Appendix 1. Meta-Analyses And Individual Studies Of Demonstrating Effectiveness Of Treatments To Reduce Readmission Risk**

|  |  |  |  |
| --- | --- | --- | --- |
| Meta-analyses | Population | Treatment(s) | Effect size |
| Feltner, 20148 | adults hospitalized with heart failure | 53 studies of 47 RCTs of treatments for heart failure patients. Included studies were categorized as home-visiting programs (15 RCTs), structured telephone support (STS) (13 trials), telemonitoring (8 trials), outpatient clinic-based treatments (7 trials), and primarily educational treatments (4 trials). 30 days, 3–6 months | Effect sizes reported by treatment. Only home visiting and MD led heart failure clinics had evidence of effectiveness, For home visiting programs; High intensity (1 study):  0.34 (0.19 to 0.62)  Lower intensity (1 study): 0.89 (0.43 to 1.85) for 30 days. |
| Leppin et al., 20149 | adults hospitalized for medical-surgical cause for more than 24 hrs and discharged home | 42 RCTs – any treatment included. Treatments included 1-7 activities. Most common activities were case management, patient education, home visit, and self-management support. | RR=0.82 [95% CI 0.73 to 0.91]  Treatments that augmented patient capacity for self-care, RR-.68 (95%CI 0.53 to 0.86) |
| Braet, Weltens, & Sermeus, 201610 | adults (18 years or older) discharged from a medical or surgical ward.) | 51 RCTs that evaluated discharge treatments. The included treatments must have been performed – at least partly – by hospital professionals with the intention of easing the care transition out of the hospital to home, or to prevent or alleviate problems after hospital discharge. Disease specific approaches were not considered. | RR=0.77 [95% CI, 0.70-0.84]  Exploratory subgroup analysis found that treatments starting during hospital stay and continuing after discharge were more effective in reducing readmissions compared to treatments starting after discharge (between subgroup difference p=0.01). Multicomponent treatments were not more effective compared to single component treatments (between subgroup difference p=0.54). Treatments oriented towards patient empowerment were more effective compared to all other treatments (between subgroup difference p=0.02). |
| Individual RCTs | Patient population | Treatment classification per Braet, Weltens, & Sermeus, 20168 | Effect size |
| Hansen, 199511 | Discharged from geriatric ward | Transitional Care (home visits) | RR=0.30 (95% CI 0.16-0.57) |
| Naylor, 199012 | Elderly medical-surgical | Discharge planning/Transitional Care | RR=0.27 (95% CI 0.04-0.83) |
| Naylor, 199413 | Elderly cardiac surgical | Discharge planning/Transitional Care | RR=0.35 (95%CI 0.19-0.65) |
| Naylor, 200414 | Elderly medical-surgical | Discharge planning/Transitional Care | RR=0.34 (95% CI 0.19 to 0.62) |
| McDonald, 200215 | Heart failure | Multidisciplinary | RR=0.18 (95% CI 0.04 to 0.80) |
| Parry, 200916 | Elderly | Transitional Care | RR=0.30 (95% CI 0.11 to 0.85) |
| Huang, 200517 | Hip fracture | Discharge Planning | RR=0.31 (95% CI 0.11 to 0.89) |
| Lopez-Cabeza, 200618 | Heart failure | Education | RR=0.32 (95% CI 0.16 to 0.32) |
| Wong, 201119 | Admitted to medical unit | Transitional Care | RR=0.42 (95% CI 0.26 to 0.66) |
| Evans, 199320 | VA patients at risk | Discharge Planning | RR=0.70 (95% CI 0.57 to 087) |
| Rich, 199521 | Elderly heart failure | Multidisciplinary | RR=0.71 (95% CI 0.51 to 0.97) |
| Legrain, 201122 | Older adults | Discharge Planning | RR=0.71 (95% CI 0.54 to 0.93) |
| Melton, 201223 | Patients at risk | Tele | RR=0.79 (95% CI 0.64 to 0.96) |

**Appendix References:**

1. van Walraven C, Dhalla IA, Bell C, et al. Derivation and validation of an index to predict early death or unplanned readmission after discharge from hospital to the community. CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne. 2010;182(6):551-557.
2. Sieck, Carol K., "Correlation of the Boost Risk Stratification Tool as a Predictor of Unplanned 30-Day Readmission in Elderly Patients" (2017). Dissertations. 2855. [https://ecommons.luc.edu/luc\_diss/2855](https://urldefense.proofpoint.com/v2/url?u=https-3A__ecommons.luc.edu_luc-5Fdiss_2855&d=DwMFAg&c=S1d2Gs1Y1NQV8Lx35_Qi5FnTH2uYWyh_OhOS94IqYCo&r=PWuOTl1QBJXJsRn5i67lTXlO_ZV4JFMfiDy9peBL7D4&m=Ham68OiBFwa40etpFvEQQ8PW-AJveuXmF4xlX3kaLec&s=6epHSYxetIWnbG3Y6JhwV8UTIcElNJiG4eMNi1F3hSc&e=).
3. Stavem K, Hoel H, Skjaker SA, Haagensen R. Charlson comorbidity index derived from chart review or administrative data: agreement and prediction of mortality in intensive care patients. *Clin Epidemiol*. 2017;9:311-320. Published 2017 Jun 2. doi:10.2147/CLEP.S133624
4. Quan H, Sundararajan V, Halfon P, Fong A, Burnand B, Luthi JC, Saunders LD, Beck CA, Feasby TE, Ghali WA. Coding algorithms for defining comorbidities in ICD-9-CM and ICD-10 administrative data. *Med Care* 2005;43(11):1130-1139.
5. Moore BJ1, White S, Washington R, Coenen N, Elixhauser A.Identifying Increased Risk of Readmission and In-hospital Mortality Using Hospital Administrative Data: The AHRQ Elixhauser Comorbidity Index. Med Care. 2017 Jul;55(7):698-705. doi: 10.1097/MLR.0000000000000735.
6. Elixhauser Comorbidity Software, Version 3.7. Agency for HealthCare Research and Quality; 2018. [https://www.hcup-us.ahrq.gov/toolssoftware/comorbidity/comorbidity.jsp](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.hcup-2Dus.ahrq.gov_toolssoftware_comorbidity_comorbidity.jsp&d=DwMFAg&c=S1d2Gs1Y1NQV8Lx35_Qi5FnTH2uYWyh_OhOS94IqYCo&r=PWuOTl1QBJXJsRn5i67lTXlO_ZV4JFMfiDy9peBL7D4&m=Ham68OiBFwa40etpFvEQQ8PW-AJveuXmF4xlX3kaLec&s=USJ7auN67SIrP0Hzt1m8gfQ6ceGgwfZb9rk0Y4OXypQ&e=).
7. Kansagara D, Englander H, Salanitro A, et al. Risk prediction models for hospital readmission: a 7 systematic review. JAMA. 2011;306(15):1688-1698.
8. Feltner C, Jones CD, Cene CW, et al. Transitional care treatments to prevent readmissions for persons with heart failure: a systematic review and meta-analysis. Annals of internal medicine. 2014;160(11):774-784.
9. Leppin AL, Gionfriddo MR, Kessler M, et al. Preventing 30-day hospital readmissions: a systematic review and meta-analysis of randomized trials. JAMA internal medicine. 2014;174(7):1095-1107.
10. Braet A, Weltens C, Sermeus W. Effectiveness of discharge treatments from hospital to home on hospital readmissions: a systematic review. JBI database of systematic reviews and implementation reports. 2016;14(2):106-173.
11. Hansen FR, Poulsen H, Sorensen KH. A model of regular geriatric follow-up by home visits to selected patients discharged from a geriatric ward: a randomized controlled trial. *Aging (Milan, Italy).* 1995;7(3):202-206.
12. Naylor MD. Comprehensive discharge planning for hospitalized elderly: a pilot study. Nurs Res. 1990; 39(3): 156-61. 67. Naylor M, Brooten D, Jones R, Lavizzo-Mourey R, Mezey M, Pauly M. Comprehensive discharge planning for the hospitalized elderly: a randomized clinical trial. Ann Intern Med. 1994; 120(12): 999-1006.
13. Naylor MD, Brooten DA, Campbell RL, Maislin G, McCauley KM, Schwartz JS. Transitional care of older adults hospitalized with heart failure: a randomized, controlled trial. Journal of the American Geriatrics Society. 2004;52(5):675-684.
14. Naylor MD, Brooten DA, Campbell RL, Maislin G, McCauley KM, Schwartz JS. Transitional care of older adults hospitalized with heart failure: a randomized, controlled trial. Journal of the American Geriatrics Society. 2004;52(5):675-684.
15. McDonald K, Ledwidge M, Cahill J, Quigley P, Maurer B, Travers B, et al. Heart failure management: Multidisciplinary care has intrinsic benefit above the optimization of medical care. J Card Fail. 2002; 8(3): 142-8.
16. Parry C, Min SJ, Chugh A, Chalmers S, Coleman EA. Further application of the care transitions treatment: results of a randomized controlled trial conducted in a fee-for-service setting. Home Health Care Serv Q. 2009; 28(2-3): 84-99.
17. Huang T, Liang S. A randomized clinical trial of the effectiveness of a discharge planning treatment in hospitalized elders with hip fracture due to falling. J Clin Nurs. 2005; 14(10): 1193-201.
18. Lopez Cabezas C, Falces Salvador C, Cubi Quadrada D, Arnau Bartes A, Ylla Bore M, Muro Perea N, et al. Randomized clinical trial of a postdischarge pharmaceutical care program vs. regular follow-up in patients with heart failure. Farm Hosp. 2006; 30(6): 328-42.
19. Wong FK, Ho MM, Yeung S, Tam SK, Chow SK. Effects of a health-social partnership transitional program on hospital readmission: a randomized controlled trial. Soc Sci Med. 2011; 73(7): 960-9.
20. Evans RL, Hendricks RD. Evaluating hospital discharge planning - a randomized clinical-trial. Med Care. 1993 Apr; 31(4): 358-70.
21. Rich MW, Beckham V, Wittenberg C, Leven CL, Freedland KE, Carney RM. A multidisciplinary treatment to prevent the readmission of elderlypati ents with congestive heart failure. *N Engl J Med*. 1995;333(18):1190-1195.
22. Legrain S, Tubach F, Bonnet-Zamponi D, Lemaire A, Aquino JP, Paillaud E, et al. A new multimodal geriatric discharge-planning treatment to prevent emergency visits and rehospitalizations of older adults: The optimization of medication in aged multicenter randomized controlled trial. J Am Geriatr Soc. 2011; 59(11): 2017-28.
23. Melton LD, Foreman C, Scott E,McGinnisM, Cousins M. Prioritized post-discharge telephonic outreach reduces hospital readmissions for select high-risk patients. *Am J Manag Care*. 2012;18(12): 838-844.