Table B.64: Care Transitions, Use of Multi-Element Models To Improve Care Transitions–Single Studies

Note: Full references are available in the [Section 15.2 reference list](#Section15point2refs) (except where noted).

| Author, Year | Description of Patient Safety Practice | Study Design;Sample Size;Patient Population | Setting | Outcomes: Benefits | Outcomes: Harms | Implementation Themes/Findings | Risk of Bias (High, Moderate, Low) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Coleman et al., 20043 | Implementing the Care Transitions Intervention (CTI), developed by Eric A. Coleman | Quasi-experimental; intervention subjects (n= 158), control subjects (1,235); patients aged 65 or older living in community | Nonprofit group managed care delivery system located in Colorado that cares for more than 56,000 patients aged 65 or older | Lower odds of rehospitalization; patients had high levels of confidence in obtaining essential information for managing their condition, communication with members of the healthcare team, and their medication regimen. | Not provided | Hospitalized subjects who received CTI were half as likely to return to the hospital as subjects who did not receive CTI. Intervention patients reported high levels of confidence in obtaining essential information for managing their condition, communicating with members of the healthcare team and understanding their medication regimen. | Not provided |
| Coleman et al., 20062 | Implementing CTI | Randomized controlled trial; n=750, community dwelling adults age 65 or older with 1 of 11 diagnoses, including stroke, congestive heart failure, coronary artery disease, cardiac arrhythmias, chronic obstructive pulmonary disease, diabetes mellitus, spinal stenosis, hip fracture, peripheral vascular disease, deep venous thrombosis and pulmonary embolism  | Large not-for-profit capitated delivery system that cares for more than 60,000 patients 65 years or older in Colorado  | Encouraging patients and their caregivers to assert a more active role in their care transitions lowers readmission rates and lowers costs. | Not provided | Intervention patients had lower rehospitalization rates at 30 days and at 90 days than control subjects. The mean hospital costs were lower for intervention patients ($2,508) vs. controls ($2,546) at 180 days. Transition coach and personal health record enabled patients/caregivers to ensure greater proportions of their needs were met. | Not provided |
| Coleman et al., 20158 | Implementing CTI | Prospective cohort study; n=83, patient/care giver partnerships; patients were Medicare recipients aged 65 years and older admitted to hospital between May 1, 2012, and March 31, 2013 | Nonprofit acute care hospital (253 beds) serving a geographically isolated community | Increased caregiver activation of care. | Generalizability of study is unknown. | Family caregivers experienced a mean improvement in activation of 6 points on a 0-10 scale. Transition coaches identified 71% of patients as having medication discrepancies or errors after hospital discharge and coached family caregivers on how to respond. The enhanced family caregiver CTI significantly improved activation, quality, goal achievement, satisfaction, and medication safety. | Not provided |
| Gardner et al., 20149 | Implementing CTI | Quasi-experimental cohort study, intervention group (n=321), internal control group (n=919); fee-for-service Medicare beneficiaries hospitalized from January 1, 2009, to May 31, 2011 | Six Rhode Island acute care hospitals | Lower healthcare utilization after discharge; lower total healthcare costs. | Not provided | Compared to control group, the intervention group had significantly lower utilization in 6 months after discharge and lower mean healthcare costs. The cost avoided per patient receiving CTI was $3,752, driven by lower 6-month rates of hospital admissions, and lower emergency department visits and observation stays. | Not provided |
| Hansen et al., 201310 | Implementing BOOST (Better Outcomes for Older Adults through Safe Transitions), which was created by the Society of Hospital Medicine | Semi controlled pre-post study, (n=11); hospitals serving medical or mixed medical-surgical patient populations | Sample of 11 hospitals varying in geography, size, and academic affiliation, including community teaching hospitals, community non-teaching hospitals, academic medical centers; range of 300-600 beds  | Decrease in readmission rates post-intervention.  | Not provided | Participation in Project BOOST seemed to be associated with a decrease in readmission rates but no significant change in length of stay among hospitals implementing BOOST tools. | Not provided |
| Hirschman et al., 201511 | Implementing the Transitional Care Model (TCM) | Evidence summary | Not provided | A cumulative per-member savings of $2,170 at 1 year post-enrollment (p<.05) was observed in the TCM intervention relative to comparison group.  | Not provided | Not provided | Not provided |
| Lee et al., 201612 | Implementing BOOST, which was created by the Society of Hospital Medicine | Retrospective design; case notes review; sample: n=324 (mean age 75); patients age 65 and older readmitted to acute medical unit | Large hospital in South London; acute medical unit with 58 beds | Use of BOOST Tool correctly predicted readmissions in U.K. and assisted in identifying high-risk patients. | BOOST Tool precision in the U.K. has yet to be determined. | Three hundred twenty-four patients were admitted for readmissions with a median of 7 days between discharge and readmission. The BOOST Tool correctly predicted 90% of readmissions using two or more risk factors and 99.1% of readmissions if one risk factor was included. | Not provided |
| Parrish et al., 20097 | Implementing CTI | Implementation study; n=791; 18 years and older; average CTI patients: white women aged 76–85 | Ten sites: five hospital led, 5 community led | Increased patient self-management of conditions. | Not provided | Presence of leadership support was determined to be critical factor in support of CTI. Sites identified engaging hospital and community-based leaders, providing additional transition coach training, and the assigning of consistent and dedicated transition coaches as available lessons. Future CTI should focus on medication management, patients with cardiovascular disease conditions or diabetes, patients older than 85 years, and African-American and Latino patients. | Not provided |
| Parry et al., 20094 | Implementing CTI | Randomized controlled trial; intervention group (n=44), control group (n=42); fee-for-service Medicare patients | Two community based hospitals in Colorado with the same parent company | Reduced hospital readmissions, | Not provided | Intervention patients were less likely to be readmitted to a hospital in general and for the same condition at 30, 90, and 180 days in comparison to control patients.  | Not provided |
| Naylor et al., 20121(full reference available in [Section 15.3 reference list](#Section15point3refs)) | Implementation of TCM | Prospective, quasi-experimental study; 172 patients; community-based older adults coping with common chronic illnesses (i.e., all primary diagnoses except neurological disorders or cancer, end-stage renal disease, and untreated psychiatric disorders) in Aetna’s Medicare Advantage program in the mid-Atlantic region | Community/outpatient | There was a significant reduction in hospital re-admissions at 3 months post-enrollment among TCM enrollees compared to the control group (45 readmissions in intervention group, 60 in controls, p<0.041). There also was a 28% reduction in total hospital days (252 vs. 351, p, 0.032). Mean score for satisfaction level with the model was 9.6 out of maximum of 10 for overall patient satisfaction. | Each advanced practice nurse (APN) managed a caseload of 18-–20 members. APNs completed a mean of 8.2 (standard deviation [SD] 3.5, range 1-25) home or physician office visits with each enrollee. Each visit lasted approximately 50 minutes. A mean of 8.4 (SD 7.21, range 151) phone contacts were completed. Total cost of TCM for the 155 Aetna enrollees included was $217,000. In comparison to the matched control group and taking into consideration cost of intervention, TCM was associated with a significant short-term decrease in total healthcare costs at 3 months of $439 per member per month (P, 0.026) and cumulative per-member savings of $2,170 over the 52-week post-enrollment period (P<0.037). | Not provided | The matched control group was obtained from a geographic area which had a 20% lower acute care utilization rate at baseline compared to the mid-Atlantic region where TCM was implemented. The higher rate in the intervention group region may suggest greater opportunity for improvement. Also, the matched control group did not have data on health status, quality of life, and satisfaction data. |
| Naylor et al., 20142(full reference available in [Section 15.3 reference list](#Section15point3refs)) | Augmented Standard Care (ASC) versus Resource Nurse Care (RNC) versus TCM  | Prospective comparative effectiveness study; 202 patients with caregiver; community-dwelling adults age 65 years and older who were hospitalized with plan to return home, lived within 30 miles of admitting hospital, spoke English, and had a family caregiver willing to enroll in the study | Three hospitals within an academic health system | Twenty-five percent of the TCM group were rehospitalized or died by day 83, compared to day 58 for the RNC group and day 33 for the ASC group. The TCM group had lower mean readmission rates per patient at 30 days compared with the RNC (P<0.001) and ASC groups (p=0.06). At 90 days post-index hospitalization, the TCM group had significant lower mean readmission rates per patient compared to the ASC group (p=0.02) only. No significant group differences in functional status were observed. | Not provided | Not provided | Not provided |
| Roper et al., 20175(full reference available in [Section 15.3 reference list](#Section15point3refs)) | Implementing the TCM | Systematic review; 23,354 patients total sorted into 3 patient groups;1. Medicaid Recipientsintervention group (n=13,476), control group (n=7,899); 2. Medicare Recipients intervention group (n=254), control group (n=764)3. Adult Patients intervention group (n=685), control group (n=276) | 120 general hospitals across 14 regional networks (NC); metropolitan (Southern CA), 13 system-affiliated medical centers; metropolitan (Portland), 4 university-based practice groups and 12 community county health centers | The three identified studies each reported reduced all-cause hospital readmissions within the first month following discharge. Effects varied from modest (1.8% reduction) to substantial (approximately 20% reduction). | Not provided | Not provided | Two of the studies were institutional improvement designs, none were randomized controlled trials. |
| Solomon et al., 20144(full reference available in [Section 15.3 reference list](#Section15point3refs)) | Implementing TCM with psychiatric patients | Randomized pilot study; 20 patients in intervention group; adults with psychiatric diagnosis discharged from hospital for acute physical illness | Two psychiatric units of an acute care hospital | Not provided | Not provided | Participants with an active need for medical services were most receptive to the program. Provider challenges included poor communication and coordination with other services. Additionally, the research team decided from the pilot to add a social worker and peer specialist to the care team. | The pilot study had reflections and lessons learned, but no concrete outcomes. |
| Voss et al., 20115 | Implementing CTI | Not provided | Not provided | Reduced hospital readmissions. | Limited generalizability.  | Thirty-day readmissions were fewer for participants who received CTI. | Not provided |
| Williams et al., 20142 (full reference available in [Section 15.1 reference list](#Section15point1refs)) | Implementing BOOST | Qualitative evaluation; n=6 pilot site hospitals and 27 later sites; patient population not available (focus is on hospitals) | Cohort of hospitals including community non-teaching and community teaching, ranging from 100 to 800 beds | Unique mentorship element of Project BOOST proved valuable in helping sites overcome unique challenges and identify factors for success. | Barriers led to less complete implementation of Project BOOST in some hospitals. | Facilitators of Project BOOST implementation included mentor, a small beginning teamwork, and proactive engagement. Common barriers included inadequate understanding of current discharge process, insufficient administrative support, lack of protected time or dedicated resources, lack of front staff buy-in. | Not provided |