**National Quality Forum—Evidence (subcriterion 1a)**

**Measure Title**: All-Cause Unplanned Readmission Measure for 30 Days Post Discharge from Inpatient Rehabilitation Facilities

**IF the measure is a component in a composite performance measure, provide the title of the Composite Measure here:** Click here to enter composite measure title

**Date of Submission**: 2/5/2014

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| **Instructions**  *For composite performance measures:*  *A separate evidence form is required for each component measure unless several components were studied together.*  *If a component measure is submitted as an individual performance measure, attach the evidence form to the individual measure submission.*   * Respond to all questions as instructed with answers immediately following the question. All information needed to demonstrate meeting the evidence subcriterion (1a) must be in this form. An appendix of *supplemental* materials may be submitted, but there is no guarantee it will be reviewed. * If you are unable to check a box, please highlight or shade the box for your response. * Maximum of 10 pages (*incudes questions/instructions*; minimum font size 11 pt; do not change margins). ***Contact NQF staff if more pages are needed.*** * Contact NQF staff regarding questions. Check for resources at [Submitting Standards webpage](http://www.qualityforum.org/Measuring_Performance/Submitting_Standards.aspx). |

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| **Note: The information provided in this form is intended to aid the Steering Committee and other stakeholders in understanding to what degree the evidence for this measure meets NQF’s evaluation criteria.**  **Subcriterion 1a.** **Evidence to Support the Measure Focus**  The measure focus is a health outcome or is evidence-based, demonstrated as follows:   * Health outcome:[**3**](#Note3) a rationale supports the relationship of the health outcome to processes or structures of care. * Intermediate clinical outcome, Process,[**4**](#Note4) or Structure: a systematic assessment and grading of the quantity, quality, and consistency of the body of evidence[**5**](#Note5)that the measure focus leads to a desired health outcome. * Patient experience with care: evidence that the measured aspects of care are those valued by patients and for which the patient is the best and/or only source of information OR that patient experience with care is correlated with desired outcomes. * Efficiency:[**6**](#Note6) evidence for the quality component as noted above.   **Notes**  **3.** Generally, rare event outcomes do not provide adequate information for improvement or discrimination; however, serious reportable events that are compared to zero are appropriate outcomes for public reporting and quality improvement.  **4.** Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multistep process, the step with the strongest evidence for the link to the desired outcome should be selected as the focus of measurement.  **5.** The preferred systems for grading the evidence are the U.S. Preventive Services Task Force (USPSTF) [grading definitions](http://www.uspreventiveservicestaskforce.org/uspstf/grades.htm) and [methods](http://www.uspreventiveservicestaskforce.org/methods.htm), or Grading of Recommendations, Assessment, Development and Evaluation [(GRADE) guidelines](http://www.gradeworkinggroup.org/publications/index.htm).  **6.** Measures of efficiency combine the concepts of resource use and quality (NQF’s [Measurement Framework: Evaluating Efficiency Across Episodes of Care](http://www.qualityforum.org/Publications/2010/01/Measurement_Framework__Evaluating_Efficiency_Across_Patient-Focused_Episodes_of_Care.aspx); [AQA Principles of Efficiency Measures](http://www.aqaalliance.org/files/PrinciplesofEfficiencyMeasurementApril2006.doc)). |

**1a.1.This is a measure of**:

Outcome

X Health outcome: Hospital readmission post-discharge from Inpatient Rehabilitation Facility (IRF)

*Health outcome includes patient-reported outcomes (PRO, i.e., HRQoL/functional status, symptom/burden, experience with care, health-related behaviors)*

☐ Intermediate clinical outcome: Click here to name the intermediate outcome

☐ Process: Click here to name the process

☐ Structure: Click here to name the structure

☐ Other: Click here to name what is being measured

**HEALTH OUTCOME PERFORMANCE MEASURE**  *If not a health outcome, skip to* [*1a.3*](#Section1a3)

**1a.2.** **Briefly state or diagram the linkage between the health outcome (or PRO) and the healthcare structures, processes, interventions, or services that influence it.**

This outcome measure estimates the rate of 30-day hospital readmissions for patients discharged from an inpatient rehabilitation facility (IRF). We do not include structure or process dimensions in the analysis. We cite below (1a.8) evidence from other studies that there are structures and processes that can affect this outcome. The evidence for reduction of readmissions is from interventions that have enhanced discharge transitions and coordination of care.

**1a.2.1.** **State the rationale supporting the relationship between the health outcome (or PRO) and at least one healthcare structure, process, intervention, or service**.

The principal rationale is that discharge planning and care coordination are key to placement of the discharged patient in the most suitable setting after the rehabilitation hospitalization. Patient-centered care requires consideration of a constellation of conditions and function of the patient to reduce the chance of adverse events resulting in patient harm. In the transition to the next setting, accounting for availability of caregivers and safety factors is vital, as is follow-up care with appropriate clinicians.

*Note: For health outcome performance measures, no further information is required; however, you may provide evidence for any of the structures, processes, interventions, or service identified above.*

**intermediate outcome, PROCESS, or STRUCTURE PERFORMANCE measure**

**1a.3.****Briefly state or diagram the linkages between structure, process, intermediate outcome, and health outcomes**. Include all the steps between the measure focus and the health outcome.

N/A

**1a.3.1.** **What is the source of the systematic review of the body of evidence that supports the performance measure?**

☐ Clinical Practice Guideline recommendation – ***complete sections*** [***1a.4***](#Section1a4)***, and*** [***1a.7***](#Section1a7)

☐ US Preventive Services Task Force Recommendation – ***complete sections*** [***1a.5***](#Section1a5) ***and*** [***1a.7***](#Section1a7)

☐ Other systematic review and grading of the body of evidence (*e.g., Cochrane Collaboration, AHRQ Evidence Practice Center*) – ***complete sections*** [***1a.6***](#Section1a6) ***and*** [***1a.7***](#Section1a7)

X Other – ***complete section*** [***1a.8***](#Section1a8)

*Please complete the sections indicated above for the source of evidence. You may skip the sections that do not apply.*

**1a.4. CLINICAL PRACTICE GUIDELINE RECOMMENDATION**

**1a.4.1.** **Guideline citation** (*including date*) and **URL for guideline** (*if available online*):

N/A

**1a.4.2.** **Identify guideline recommendation number and/or page number** and **quote verbatim, the specific guideline recommendation**.

N/A

**1a.4.3.** **Grade assigned to the quoted recommendation with definition of the grade:**

N/A

**1a.4.4. Provide all other grades and associated definitions for recommendations in the grading system.** (*Note: If separate grades for the strength of the evidence, report them in section 1a.7.*)

N/A

**1a.4.5. Citation and URL for methodology for grading recommendations** (*if different from 1a.4.1*)**:**

N/A

**1a.4.6. If guideline is evidence-based (rather than expert opinion), are the details of the quantity, quality, and consistency of the body of evidence available (e.g., evidence tables)?**

☐Yes **→ *complete section*** [***1a.7***](#Section1a7)

☐No **→ *report on another systematic review of the evidence in sections*** [***1a.6***](#Section1a6) ***and*** [***1a.7***](#Section1a7)***; if another review does not exist, provide what is known from the guideline review of evidence in*** [***1a.7***](#Section1a7)

N/A

**1a.5.** **UNITED STATES PREVENTIVE SERVICES TASK FORCE RECOMMENDATION**

**1a.5.1.** **Recommendation citation** (*including date*) and **URL for recommendation** (*if available online*):

N/A

**1a.5.2.** **Identify recommendation number and/or page number** and **quote verbatim, the specific recommendation**.

N/A

**1a.5.3.** **Grade assigned to the quoted recommendation with definition of the grade**:

N/A

**1a.5.4. Provide all other grades and associated definitions for recommendations in the grading system.** (*Note: the* *grading system for the evidence should be reported in section 1a.7.*)

N/A

**1a.5.5. Citation and URL for methodology for grading recommendations** (*if different from 1a.5.1*)**:**

***Complete section*** [***1a.7***](#Section1a7)

N/A

**1a.6. OTHER SYSTEMATIC REVIEW OF THE BODY OF EVIDENCE**

**1a.6.1.** **Citation** (*including date*) and **URL** (*if available online*):

N/A

**1a.6.2.** **Citation and** **URL for methodology for evidence review and grading** (*if different from 1a.6.1*)**:**

***Complete section*** [***1a.7***](#Section1a7)

N/A

**1a.7. FINDINGS FROM SYSTEMATIC REVIEW OF BODY OF THE EVIDENCE supporting the measure**

**1a.7.1.** **What was the specific structure, treatment, intervention, service, or intermediate outcome addressed in the evidence review?**

N/A

**1a.7.2.** **Grade assigned for the quality of the quoted evidence with definition of the grade**:

N/A

**1a.7.3. Provide all other grades and associated definitions for strength of the evidence in the grading system.**

N/A

**1a.7.4.** **What is the time period covered by the body of evidence? (*provide the date range, e.g., 1990-2010*). Date range**: Click here to enter date range

N/A

**QUANTITY AND QUALITY OF BODY OF EVIDENCE**

**1a.7.5.****How many and what type of study designs are included in the body of evidence**? (*e.g., 3 randomized controlled trials and 1 observational study*)

N/A

**1a.7.6.** **What is the overall quality of evidence across studies in the body of evidence**? (*discuss the certainty or confidence in the estimates of effect particularly in relation to study factors such as design flaws, imprecision due to small numbers, indirectness of studies to the measure focus or target population*)

N/A

**ESTIMATES OF BENEFIT AND CONSISTENCY ACROSS STUDIES IN BODY OF EVIDENCE**

**1a.7.7.** **What are the estimates of benefit—magnitude and direction of effect on outcome(s) across studies in the body of evidence**? (*e.g., ranges of percentages or odds ratios for improvement/ decline across studies, results of meta-analysis, and statistical significance*)

N/A

**1a.7.8.** **What harms were studied and how do they affect the net benefit (benefits over harms)?**

N/A

**UPDATE TO THE SYSTEMATIC REVIEW(S) OF THE BODY OF EVIDENCE**

**1a.7.9.** **If new studies have been conducted since the systematic review of the body of evidence, provide for each new study: 1) citation, 2) description, 3) results, 4) impact on conclusions of systematic review**.

N/A

**1a.8 OTHER SOURCE OF EVIDENCE**

*If source of evidence is NOT from a clinical practice guideline, USPSTF, or systematic review, please describe the evidence on which you are basing the performance measure.*

There is limited evidence related to the structure-process-outcome relationship specifically for reducing readmissions post-IRF discharge. However, there is other evidence demonstrating this in the elderly and in Medicare patients as well as from other inpatient settings, such as short-term acute care hospitals and skilled nursing facilities. Studies described below support the theory that structural and process changes can be made to reduce hospital readmissions. Therefore, the findings and conceptual premise is relevant to this post-acute care setting.

The Agency for Healthcare Research and Quality has identified a list of diagnoses considered “Ambulatory Care Sensitive”, indicating that they can be prevented with proper prevention and early intervention. Other similar lists exist, including a compilation done by MedPAC (2011) labeled “Potentially Avoidable Hospitalizations”. In post-acute care, these lists are interpreted as conditions that could be prevented entirely (such as dehydration) or identified in the early stages and properly treated in the facility (such as urinary tract infection). This list of conditions includes many of the diagnoses cited as the most common reasons for readmission (Jencks, Williams, and Coleman 2009).

A randomized clinical study found that follow-up after care for disabled stroke patients post IRF discharge, including home visits by a physician or instructions provided in the home by a physiotherapist, was associated with significantly lower readmission rates (Andersen et al., 2000).

Research suggest that functional status at admission is a strong predictor of post IRF discharge readmission. (Hoyer et al., 2013; Ottenbacher et al., 2012; Ottenbacher et al., 2003). Other patient-level characteristics predictive of readmissions include basic daily living skills, length of hospital stay, depressive symptoms, anxiety, and social support (Dossa, Glickman, & Berlowitz, 2011; Hoyer et al., 2013; Ottenbacher et al., 2012; Ottenbacher et al., 2003). These studies also suggest potential processes and interventions that providers can develop in order to identify patients at higher risk for readmission. Providers can then tailor their rehabilitation, discharge planning, and follow up to reduce readmission rates. Once hospital readmission rates are measured, providers could identify which factors are most likely to impact improvement and design and implement processes to address these factors.

Processes that affect readmission after acute hospital discharge, such as discharge planning and transition of care, communications, and care coordination, also occur at other inpatient facilities, such as IRFs, and may affect readmission rates. Randomized controlled trials in short-stay acute-care hospitals have shown that improvements in the quality of care during the initial admission; improvement in communication with patients, their caregivers, and their clinicians; patient education; predischarge assessment; and coordination of care after discharge can directly reduce 30-day readmission rates by 20 to 40 percent. A 2011 meta-analysis of such randomized clinical trials found evidence that interventions associated with discharge planning helped to reduce readmission rates (Naylor et al, 2011). One randomized clinical trial found an intervention provided by advanced practice nurses including comprehensive discharge planning and home follow-up for patients was associated with fewer readmissions and lower Medicare costs (Naylor et al., 1999). Evidence that hospitals have been able to reduce readmission through these interventions illustrates the degree to which hospital best practices in these areas can improve readmission rates.

Evidence from another institutional post-acute care setting that provides rehabilitation to Medicare beneficiaries – skilled nursing facilities (SNF) – demonstrates multiple structural and process factors linked to the outcome of hospital readmission. For example, higher staffing levels across licensure types were associated with a decrease in the rate of potentially avoidable readmissions 100 days from SNF admission (MedPAC 2011). Interventions such as care coordination, medication reconciliation, and patient education have also been associated with lower readmission rates. Components of the Care Transitions Intervention (a standardized discharge sheet format, medication reconciliation sheets, enhanced prescription drug education, education on “red flags”, follow-up phone calls, home visits) and the involvement of a nurse practitioner in facilitating care coordination and family involvement in care similarly decreased readmissions (Coleman et al. 2004). Coleman and colleagues (2004) found that patients participating in the Care Transitions Intervention had approximately 50 percent fewer readmissions at 30, 90, and 180 days post initial hospital discharge than did the control group, with adjusted odds ratios of 0.52, 0.43, and 0.57, respectively.

Evidence from these observational and intervention studies (for example Andersen et al., 2000; Coleman et al. 2004; and Naylor et al., 1999) support the theory that structural and process changes can be made to reduce hospital readmissions in post-acute care. Though the evidence cited above is from other inpatient or post-acute care settings and does not address IRF patients specifically, the findings are still quite relevant to the IRF patient population.

**1a.8.1** **What process was used to identify the evidence?**

We identified evidence from literature searches using PubMed, and in reviews of references cited in the relevant identified studies.

**1a.8.2.** **Provide the citation and summary for each piece of evidence.**

Andersen, H. E., K. Schultz-Larsen, et al. (2000). "Can readmission after stroke be prevented? Results of a randomized clinical study: a postdischarge follow-up service for stroke survivors." Stroke 31(5): 1038-1045.

BACKGROUND AND PURPOSE: About 50% of stroke survivors are discharged to their homes with lasting disability. Knowledge, however, of the importance of follow-up services that targets these patients is sparse. The purpose of the present study was to evaluate 2 models of follow-up intervention after discharge. The study hypothesis was that intervention could reduce readmission rates and institutionalization and prevent functional decline. We report the results regarding readmission. METHODS: This randomized study included 155 stroke patients with persistent impairment and disability who, after the completion of inpatient rehabilitation, were discharged to their homes. The patients were randomized to 1 of 2 follow-up interventions provided in addition to standard care or to standard aftercare. Fifty-four received follow-up home visits by a physician (INT1-HVP), 53 were provided instructions by a physiotherapist in their home (INT2-PI), and 48 received standard aftercare only (controls). Baseline characteristics for the 3 groups were comparable. Six months after discharge, data were obtained on readmission and institutionalization. RESULTS: The readmission rates within 6 months after discharge were significantly lower in the intervention groups than in the control group (INT1-HVP 26%, INT2-PI 34%, controls 44%; P=0.028). Multivariate analysis of readmission risk showed a significant favorable effect of intervention (INT1-HVP or INT2-PI) in interaction with length of hospital stay (P=0.0332), indicating that the effect of intervention was strongest for patients with a prolonged inpatient rehabilitation. CONCLUSIONS: Readmission is common among disabled stroke survivors. Follow-up intervention after discharge seems to be a way of preventing readmission, especially for patients with long inpatient rehabilitation.

Coleman, E. A., J. D. Smith, et al. (2004). "Preparing patients and caregivers to participate in care delivered across settings: the Care Transitions Intervention." J Am Geriatr Soc 52(11): 1817-1825.

OBJECTIVES: To test whether an intervention designed to encourage older patients and their caregivers to assert a more active role during care transitions can reduce rehospitalization rates. DESIGN: Quasi-experimental design whereby subjects receiving the intervention (n=158) were compared with control subjects derived from administrative data (n=1,235). SETTING: A large integrated delivery system in Colorado. PARTICIPANTS: Community-dwelling adults aged 65 and older admitted to the study hospital with one of nine selected conditions. INTERVENTION: Intervention subjects received tools to promote cross-site communication, encouragement to take a more active role in their care and assert their preferences, and continuity across settings and guidance from a transition coach. MEASUREMENTS: Rates of postdischarge hospital use at 30, 60, and 90 days. Intervention subjects' care experience was assessed using the care transitions measure. RESULTS: The adjusted odds ratio comparing rehospitalization of intervention subjects with that of controls was 0.52 (95% confidence interval (CI)=0.28-0.96) at 30 days, 0.43 (95% CI=0.25-0.72) at 90 days, and 0.57 (95% CI=0.36-0.92) at 180 days. 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. CONCLUSION: Supporting patients and caregivers to take a more active role during care transitions appears promising for reducing rates of subsequent hospitalization. Further testing may include more diverse populations and patients at risk for transitions who are not acutely ill.

Dossa, A., M. E. Glickman, et al. (2011). "Association between mental health conditions and rehospitalization, mortality, and functional outcomes in patients with stroke following inpatient rehabilitation." BMC Health Serv Res 11: 311.

BACKGROUND: Limited evidence exists regarding the association of pre-existing mental health conditions in patients with stroke and stroke outcomes such as rehospitalization, mortality, and function. We examined the association between mental health conditions and rehospitalization, mortality, and functional outcomes in patients with stroke following inpatient rehabilitation. METHODS: Our observational study used the 2001 VA Integrated Stroke Outcomes database of 2162 patients with stroke who underwent rehabilitation at a Veterans Affairs Medical Center. Separate models were fit to our outcome measures that included 6-month rehospitalization or death, 6-month mortality post-discharge, and functional outcomes post inpatient rehabilitation as a function of number and type of mental health conditions. The models controlled for patient socio-demographics, length of stay, functional status, and rehabilitation setting. RESULTS: Patients had an average age of 68 years. Patients with stroke and two or more mental health conditions were more likely to be readmitted or die compared to patients with no conditions (OR: 1.44, p = 0.04). Depression and anxiety were associated with a greater likelihood of rehospitalization or death (OR: 1.33, p = 0.04; OR:1.47, p = 0.03). Patients with anxiety were more likely to die at six months (OR: 2.49, p = 0.001). CONCLUSIONS: Patients with stroke with pre-existing mental health conditions may need additional psychotherapy interventions, which may potentially improve stroke outcomes post-hospitalization.

Hoyer, E. H., D. M. Needham, et al. (2013). "Functional status impairment is associated with unplanned readmissions." Arch Phys Med Rehabil 94(10): 1951-1958.

OBJECTIVE: To determine whether functional status on admission to a Comprehensive Integrated Inpatient Rehabilitation Program (CIIRP) is associated with unplanned readmission to acute care. DESIGN: Retrospective cohort study. SETTING: Academic hospital-based CIIRP. PARTICIPANTS: Consecutive patients (N=1515) admitted to a CIIRP between January 2009 and June 2012. INTERVENTIONS: Patients' functional status, the primary exposure variable, was assessed using tertiles of the total FIM score at CIIRP admission, with secondary analyses using the FIM motor and cognitive domains. A propensity score, consisting of 25 relevant clinical and demographic variables, was used to adjust for confounding in the analysis. MAIN OUTCOME MEASURES: Readmission to acute care was categorized as (1) readmission before planned discharge from the CIIRP, (2) readmission within 30 days of discharge from the CIIRP, and (3) total readmissions from both groups, with total readmissions being the a priori primary outcome. RESULTS: Among the 1515 patients, there were 347 total readmissions. Total readmissions were significantly associated with FIM scores, with adjusted odds ratios (AORs) and 95% confidence intervals (CIs) for the lowest and middle FIM tertiles versus the highest tertile (AOR=2.6; 95% CI, 1.9-3.7; P<.001 and AOR=1.7; 95% CI, 1.2-2.4; P=.002, respectively). There were similar findings for secondary analyses of readmission before planned discharge from the CIIRP (AOR=3.5; 95% CI, 2.2-5.8; P<.001 and AOR=2.1; 95% CI, 1.3-3.5l P=.002, respectively), and a weaker association for readmissions after discharge from the CIIRP (AOR=1.6; 95% CI, 1.0-2.4; P=.047 and AOR=1.3; 95% CI, 0.8-1.9; P=.28, respectively). The FIM motor domain score was more strongly associated with readmissions than the FIM cognitive score. CONCLUSIONS: Functional status on admission to the CIIRP is strongly associated with readmission to acute care, particularly for motor aspects of functional status and readmission before planned discharge from the CIIRP. Efforts to reduce hospital readmissions should consider patient functional status as an important and potentially modifiable risk factor.

Jencks, S. F., M. V. Williams, et al. (2009). "Rehospitalizations among patients in the Medicare fee-for-service program." N Engl J Med 360(14): 1418-1428.

BACKGROUND: Reducing rates of rehospitalization has attracted attention from policymakers as a way to improve quality of care and reduce costs. However, we have limited information on the frequency and patterns of rehospitalization in the United States to aid in planning the necessary changes. METHODS: We analyzed Medicare claims data from 2003-2004 to describe the patterns of rehospitalization and the relation of rehospitalization to demographic characteristics of the patients and to characteristics of the hospitals. RESULTS: Almost one fifth (19.6%) of the 11,855,702 Medicare beneficiaries who had been discharged from a hospital were rehospitalized within 30 days, and 34.0% were rehospitalized within 90 days; 67.1% [corrected] of patients who had been discharged with medical conditions and 51.5% of those who had been discharged after surgical procedures were rehospitalized or died within the first year after discharge. In the case of 50.2% [corrected] of the patients who were rehospitalized within 30 days after a medical discharge to the community, there was no bill for a visit to a physician's office between the time of discharge and rehospitalization. Among patients who were rehospitalized within 30 days after a surgical discharge, 70.5% were rehospitalized for a medical condition. We estimate that about 10% of rehospitalizations were likely to have been planned. The average stay of rehospitalized patients was 0.6 day longer than that of patients in the same diagnosis-related group whose most recent hospitalization had been at least 6 months previously. We estimate that the cost to Medicare of unplanned rehospitalizations in 2004 was $17.4 billion. CONCLUSIONS: Rehospitalizations among Medicare beneficiaries are prevalent and costly.

Medicare Payment Advisory Commission (U.S.). Trends in Risk Adjusted Skilled Nursing Facility Rates of Community Discharge and Potentially Avoidable Rehospitalization 2000-2008. Washington, DC: Medicare Payment Advisory Commission, June 2011

Naylor, M. D., L. H. Aiken, et al. (2011). "The care span: The importance of transitional care in achieving health reform." Health Aff (Millwood) 30(4): 746-754.

Under the Affordable Care Act of 2010, a variety of transitional care programs and services have been established to improve quality and reduce costs. These programs help hospitalized patients with complex chronic conditions-often the most vulnerable-transfer in a safe and timely manner from one level of care to another or from one type of care setting to another. We conducted a systematic review of the research literature and summarized twenty-one randomized clinical trials of transitional care interventions targeting chronically ill adults. We identified nine interventions that demonstrated positive effects on measures related to hospital readmissions-a key focus of health reform. Most of the interventions led to reductions in readmissions through at least thirty days after discharge. Many of the successful interventions shared similar features, such as assigning a nurse as the clinical manager or leader of care and including in-person home visits to discharged patients. Based on these findings, we recommend several strategies to guide the implementation of transitional care under the Affordable Care Act, such as encouraging the adoption of the most effective interventions through such programs as the Community-Based Care Transitions Program and Medicare shared savings and payment bundling experiments.

Naylor, M. D., D. Brooten, et al. (1999). "Comprehensive discharge planning and home follow-up of hospitalized elders: a randomized clinical trial." JAMA 281(7): 613-620.

CONTEXT: Comprehensive discharge planning by advanced practice nurses has demonstrated short-term reductions in readmissions of elderly patients, but the benefits of more intensive follow-up of hospitalized elders at risk for poor outcomes after discharge has not been studied. OBJECTIVE: To examine the effectiveness of an advanced practice nurse-centered discharge planning and home follow-up intervention for elders at risk for hospital readmissions. DESIGN: Randomized clinical trial with follow-up at 2, 6, 12, and 24 weeks after index hospital discharge. SETTING: Two urban, academically affiliated hospitals in Philadelphia, Pa. PARTICIPANTS: Eligible patients were 65 years or older, hospitalized between August 1992 and March 1996, and had 1 of several medical and surgical reasons for admission. INTERVENTION: Intervention group patients received a comprehensive discharge planning and home follow-up protocol designed specifically for elders at risk for poor outcomes after discharge and implemented by advanced practice nurses. MAIN OUTCOME MEASURES: Readmissions, time to first readmission, acute care visits after discharge, costs, functional status, depression, and patient satisfaction. RESULTS: A total of 363 patients (186 in the control group and 177 in the intervention group) were enrolled in the study; 70% of intervention and 74% of control subjects completed the trial. Mean age of sample was 75 years; 50% were men and 45% were black. By week 24 after the index hospital discharge, control group patients were more likely than intervention group patients to be readmitted at least once (37.1 % vs 20.3 %; P<.001). Fewer intervention group patients had multiple readmissions (6.2% vs 14.5%; P = .01) and the intervention group had fewer hospital days per patient (1.53 vs 4.09 days; P<.001). Time to first readmission was increased in the intervention group (P<.001). At 24 weeks after discharge, total Medicare reimbursements for health services were about $1.2 million in the control group vs about $0.6 million in the intervention group (P<.001). There were no significant group differences in post-discharge acute care visits, functional status, depression, or patient satisfaction. CONCLUSIONS: An advanced practice nurse-centered discharge planning and home care intervention for at-risk hospitalized elders reduced readmissions, lengthened the time between discharge and readmission, and decreased the costs of providing health care. Thus, the intervention demonstrated great potential in promoting positive outcomes for hospitalized elders at high risk for rehospitalization while reducing costs.

Ottenbacher, K. J., J. E. Graham, et al. (2012). "Hospital readmission in persons with stroke following postacute inpatient rehabilitation." J Gerontol A Biol Sci Med Sci 67(8): 875-881.

BACKGROUND: Readmission is an important quality indicator following acute care hospitalization. We examined factors associated with hospital readmission in persons with stroke following postacute inpatient rehabilitation. METHODS: Prospective cohort study including 674 persons with stroke who received rehabilitation at 11 facilities located in eight states and the District of Columbia. Measures included hospital readmission within 3 months of discharge, sociodemographic characteristics, length of stay, primary payment source, comorbidities, stroke type, standardized assessments of motor and cognitive function, depressive symptoms, and social support. RESULTS: Mean age was 71.5 years (SD = 10.5). Twenty-five percent of patients reported high depressive symptoms. Overall, 18% (n = 122) of the sample was rehospitalized. Univariate analyses showed that people who were rehospitalized were more likely (p < .05) to be non-Hispanic white, married, demonstrate less functional independence at discharge, experience longer lengths of stay in rehabilitation, and report more depressive symptoms and lower social support. In the fully adjusted multivariable hierarchical generalized linear model, motor functional status (OR = 0.98, 95% CI 0.96-0.99), depressive symptoms (OR = 1.80, 95% CI 1.06-3.05), and social support (OR = 2.28, 95% CI 1.29-4.03) remained statistically significant. In addition, a minority-by-depressive symptoms interaction term also reached statistical significance. CONCLUSION: Functional status, depressive symptoms, and social support were important predictors of hospital readmission. These variables are not included in most administrative data sets. Future research to develop useful risk-adjustment models for rehospitalization following postacute inpatient rehabilitation services should include large diverse samples and explore practical sources for additional meaningful information.

Ottenbacher, K. J., P. M. Smith, et al. (2003). "Hospital readmission of persons with hip fracture following medical rehabilitation." Arch Gerontol Geriatr 36(1): 15-22.

A significant percentage of older adults hospitalized and treated for hip fracture are readmitted to a hospital within six months. We analyzed information from a national database, the Uniform Data System for Medical Rehabilitation. Records for 8,236 patients (1994-98) who received inpatient medical rehabilitation following treatment for hip fracture were examined. Mean age was 76.51 years (S.D. = 12.48) with 71% female and 79% non-Hispanic White. The primary outcome measure was incidence of hospital readmission 0-180 days post-discharge. The hospital readmission rate was 16.7%. A Cox regression model predicting rehospitalization included the following variables (p < 0.05): basic daily living skills, age, length of stay, ethnicity, and gender. There was a statistically significant difference in the percent of male versus female patients rehospitalized for Hispanic subjects but not for non-Hispanic white or African American subjects. The greatest variability occurred among male patients. A total of 18.1% of non-Hispanic White males and 16.8% of African American males were rehospitalized. In contrast, only 10.1% of Hispanic males were rehospitalized. Basic daily living skills, length of hospital stay, age, ethnicity and gender were variables associated with hospital readmission following medical rehabilitation in persons with hip fracture. These variables should be considered in developing intervention programs to reduce the risk of hospital readmission.