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Conference Abstract

The effects of compliance to daily telehealth sessions on hospitalization rates in the chronically ill elderly

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Abstract

Introduction: Lowering health care resource utilization, particularly hospitalizations in high cost, chronically ill elderly populations, is a priority for providers, patients and health payers. The Health Buddy Program (HBP), a content-driven telehealth system combined with care management, is designed to improve patient self-management and timely access to care. We sought to examine whether the level of engagement with daily HBP sessions, applied as part of a U.S. Medicare demonstration project, was associated with decreased rates of quarterly hospitalizations compared to baseline and controls.

Methods: Patients with high-cost resource utilization were offered participation in a 2006-2010 Medicare HBP demonstration project. For comparison, a sample of Medicare patients was identified from a 5% random sample of Medicare beneficiaries. Intervention and control patients were propensity-score matched, controlling for demographics, comorbidities, the Elixhauser comorbidity index, total health care costs, and select all-cause utilization during the baseline year. A subset of intervention patients who engaged with the device (i.e., used it at least one time) and their matched controls were further selected for this analysis. The level of engagement was calculated by dividing total days responded to Health Buddy in the two-year study period by the number of days since starting the intervention. Engaged patients were stratified into four quartiles based on the level of HBP engagement; 25th percentile =16% engagement, 50th percentile =40%, 75th percentile =70%. Difference-in-difference analyses were used to descriptively compare quarterly all-cause inpatient admissions over the study period compared to baseline for the entire engaged population compared to their matched controls and for each quartile of engagement level to their matched controls. The same process was repeated for two subpopulations of patients with Chronic Obstructive Pulmonary Disease (COPD) and those with Congestive Heart Failure (CHF) determined by the presence of certain ICD-9 codes in their claims data. Statistical significance was defined as p-value <0.05.

Results: 1,767 intervention patients were matched to controls. At baseline, the intervention and matched controls had similar characteristics except for rates of coronary artery disease and ischemic heart disease and the number of SNF, outpatient, and home health visits. 652 intervention patients engaged with the device; these patients and their matched controls were

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used in the analysis. Compared to the matched controls, the overall intervention group had significantly reduced quarterly

all-cause admissions (-17.9%) compared to baseline. Engaged patients within the <25th percentile (n=163) and 25th- 50th percentiles (n=162) percentiles of HBP engagement showed no significant difference in average quarterly inpatient admissions compared to baseline. However, patients within the 50th - 75th percentiles (n=163) showed a significantly reduced level of hospitalizations (54.3%) as well as patients in the >75% percentile, who had a 37.7% reduction in the rate of average quarterly admissions compared to baseline. For patients with COPD (n=257) and CHF (n=234) similar patterns were noted with significant reductions in hospitalization rates for patients compared to baseline in the greater than 50% percentiles for level of engagement.

Conclusion: Higher levels of engagement are associated with greater reductions in hospitalizations compared with matched controls. In general, chronically ill elderly patients with a minimum of 40% compliance (greater than the 50th percentile in engagement level) with the HBP sessions experienced a significant reduction in the rate of quarterly inpatient admissions. This is also true for patients with COPD and CHF. However, results should be interpreted while taking into account potential unobserved patient characteristics that could be associated with the patient's decision to engage with the system.

Keywords:

compliance, engagement, telehealth, chronic care, outcomes, hospitalizations

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