Effect of a hospitalist-run post-discharge clinic on adverse post-discharge outcomes

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Background: Hospitalist-run post-discharge clinics (PDCs) are being created to improve transitions in care. However, there are few data on their efficacy. The Denver VA Medical Center is unique in having a well-established hospitalist-run post-discharge clinic, in addition to urgent care and primary care clinics as post-hospitalization follow-up options. We aimed to assess the utility of the PDC compared with follow-up in primary care or with an urgent care provider, in terms of post-discharge outcomes at thirty days.

Methods: The authors retrospectively reviewed all discharges from the Denver VA Medical Center’s general medical service from January 2005 to August 2012 using the VA’s Informatics and Computing Infrastructure (VINCI) database. Patients discharged to home in the Denver metro area who had a first follow-up visit with PDC, urgent care, or primary care within thirty days were included. The primary outcome was a composite of Emergency Department visits, hospital readmissions, and mortality in the thirty days following discharge. Outcomes were compared between the three groups in unadjusted analysis; outcomes were compared between PDC and primary care using propensity score-adjusted analyses to adjust for baseline differences in age, gender, comorbidity, previous hospital admissions, number of discharge medications, and time to first post-discharge visit.

Results: 5085 patients were included; 538 who followed up in PDC, 2699 in urgent care, and 1848 in primary care. Patients were older (average age in PDC 67.8 years, urgent care, 67.1, primary care, 64.8, p<0.0001 for comparison) and predominantly male (95%, p=NS). They also had high levels of baseline comorbidity as reflected in Elixhauser comorbidity index scores (PDC, 0.80, urgent care, 0.69, primary care, 0.75, p=0.02 for comparison), number of discharge medications (approximately 10 in each group, p=NS), and prior hospital admissions (18-23% with an admission in the prior year, p=NS). Hospital length of stay (LOS) significantly varied between groups, with LOS 2.4 days shorter in PDC than primary care follow-up (PDC, 3.8 days, urgent care, 5.0 days, primary care, 6.2 days, p=0.04 for comparison). Despite this, outcomes at thirty days were not statistically different between the groups in unadjusted analysis (19.9% in PDC, 18.3% in urgent care, and 17.5% in primary care, p=0.42); there was similarly no difference between PDC and primary care follow-up in propensity-adjusted multivariate analysis, adjusting for baseline differences between groups. The time to the first outpatient visit was 5.0 days in PDC, 9.4 in urgent care, and 13.7 in primary care.

Conclusions: Our results suggest a hospitalist-run post-discharge clinic is associated with an index hospital length of stay that is 2.4 days shorter, with equivalent outcomes at thirty days, to follow-up in primary care, despite an older and sicker population seen in the clinic. Increased access to early post-discharge follow-up may be linked to shorter lengths of stay. It is notable our results occurred in a healthcare system with robust primary care access and a shared electronic medical record (EMR); the effect of a hospitalist-run PDC may be increased in systems without these advantages. Further study of the impact of PDC clinics is needed.
The Association Between Care Coordination and Health Outcomes in Episodes of Care

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Background: Better coordinated care is hoped to improve patient outcomes and reduce health spending, but the health and cost consequences associated with the current levels of care coordination have not been quantified. Our goal was to measure the extent to which care coordination was linked with health outcomes and costs of care for Medicare beneficiaries with chronic disease.

Methods: Using 5% sample Medicare data from 2008 and 2009, we conducted a retrospective cohort study comparing the health outcomes and costs of care for Medicare beneficiaries experiencing variable continuity of care during a 12 month episode of care for congestive heart failure (CHF, n=53,488), chronic obstructive pulmonary disease (COPD, n=76,520) or diabetes (DM, n=166,654). The Bice-Boxerman Continuity of Care (COC) Index was used to assess care coordination with values ranging from 0 to 1.0. We used multivariable logistic regression models to examine the association between COC and hospitalizations, emergency room visits, and specific types of complications. Two-part models (logistic regression models followed by generalized linear regression models with gamma variance distribution and log link function) were used to test whether COC was associated with costs of care. Sensitivity analyses explored alternative claims-based measures of coordination.

Results: After multivariable adjustment, higher levels of coordination were associated with lower odds of inpatient hospitalization (Odds Ratio [OR] for 0.1 increase in COC Index=0.94 for CHF, 0.95 for COPD, and 0.95 for DM, all p<0.0001), emergency department visits (OR=0.92 for CHF, 0.93 for COPD, and 0.94 for DM, all p<0.0001), and odds of specific types of complications. For every 0.1 increase in the COC index, total episode costs of care were 4.7% lower for CHF (95% CI 4.4% to 5.0%), 6.3% lower for COPD (95% CI 6.0% to 6.5%), and 5.1% lower for DM (95% CI 5.0% to 5.2%) in adjusted analyses. Extrapolating the results to all Medicare beneficiaries, the total reduction in Medicare spending associated with improving coordination from its current level to the population median would be approximately $1.5 billion for the three conditions.

Conclusions: Modest differences in care coordination for Medicare beneficiaries may be associated with sizable cost reductions.
Background: Depression contributes to disability and there are ethnic and racial disparities in access to and outcomes of care. Quality improvement (QI) programs for depression in primary care improve outcomes relative to usual care, but little is known about whether implementing them across health and social service programs in under-resourced communities improves outcomes. This study compared the effectiveness of two approaches to implement depression QI, a community-based participatory approach promoting multi-sector collaboration (community engagement or CE) compared to a typical QI approach focused on individual programs (technical assistance or TA), at improving client health and quality of life outcomes.

Methods: We conducted a group-level randomized comparative effectiveness trial in two under-resourced communities. We identified and enrolled 93 programs from health, social and other services sectors using a community partnered approach; matched programs were randomized to the CE or TA trial arms. Of the 4,440 clients screened from 93 programs, 1,322 were eligible by PHQ-8 >= 10; 1,246 enrolled and 1,018 completed baseline or 6 month follow-up. Primary outcome measures were self-reported mental health quality of life and depressive symptoms. We conducted intent-to-treat analyses using logistic regression models for dichotomous measures and loglinear models for counts, adjusting for baseline status of the dependent variable and covariates (age, sex, >=3 chronic conditions, education, race/ethnicity, family poverty, past-year alcohol abuse or illicit drug use, past-year depressive disorder, and community). All analyses accounted for clustering of clients within programs, weighting to characteristics of the eligible sample, and item-level imputation for missing data and wave-level imputation for missing surveys.

Results: Of 1,018 depressed clients, 57% were female, 87% were Latino and/or African American; 44% had less than a high school education, 74% had income below the poverty level, 20% worked and 54% were uninsured. The percentage having past-year depressive disorder was 62%, while 39% had substance abuse and 55% had multiple chronic conditions. Over half had risk factors for homelessness. There were no significant differences by intervention status.

Community engagement was significantly (p<0.05) more effective than program technical assistance at reducing poor mental health quality of life (odds ratio or OR: 0.74), improving physical activity (OR: 1.50), reducing risk factors for homelessness (OR: 0.61), reducing hospitalizations for behavioral health conditions (OR: 0.51) and medication visits among mental health specialty users (OR: 0.49), while increasing depression care visits in primary care/public health (OR: 2.63), faith-based (OR: 2.84), and park/community center (OR: 6.20) settings. Employment, antidepressant use, and total depression contacts were not significantly affected (p>0.05).

Conclusions: Community engagement to collaboratively address depression across multiple sectors was more effective than individual program technical assistance in improving mental health quality of life, physical activity and homelessness risk factors while shifting utilization away from hospitalizations and mental health specialty medication visits toward primary care and community-based sectors, offering a partnership model to address multiple outcome disparities for depressed clients in under-resourced communities.
Validation of a novel self-report instrument for measuring panel management in primary care

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Background: To meet demands for evidence-based chronic and preventive services and improve performance, primary care practices are turning toward team-based strategies such as panel management (PM). In PM, non-clinician staff such as medical assistants are given increased responsibility for routine preventive and chronic care, using patient registries to identify care gaps and standing orders to close these gaps. No validated instruments have been published for measuring the degree to which a practice has implemented PM. We developed and tested a self-report Panel Management Questionnaire (PMQ) for primary care clinicians and staff to assess implementation of PM.

Methods: Our conceptual model of PM included 4 domains: 1. proper care gap identification by PM staff, 2. confidence in use of standing orders, 3. ability of PM staff to counsel patients regarding needed services, and 4. overall buy-in into the PM model. The 12-item PMQ includes one item to represent each of these domains, with each item applied to three representative service areas: immunizations, cancer screening, and diabetes care. Language on items was tailored into a clinician PMQ and staff PMQ to represent each perspective. A 1-10 Likert scale was used for each item. We calculated a PMQ subscale score for each service type (e.g. immunizations) by averaging scores for the 4 domains, and an overall PMQ score as the mean of all 12 items, with a score of 10 representing the greatest degree of PM implementation.

We administered the PMQ to clinicians and staff in 10 county-operated and 5 university-based primary care clinics in San Francisco, CA in various phases of PM implementation using a self-administered questionnaire between February–May 2012. We tested PMQ internal consistency using Cronbach’s alpha. We tested external validity at the clinic level, using Pearson’s correlation to measure within-clinic agreement between clinician and staff PMQ scores, and the association between PMQ scores and a composite measure of clinic quality of care for the three service areas included in the PMQ (percent of eligible patients with up-to-date Tdap vaccination, breast cancer screening, and hemoglobin A1c and LDL testing for diabetics).

Results: Respondents included 208 clinicians and 136 staff respondents. The response rate was 55% for clinicians and 65% for staff. Mean score for the overall 12-item PMQ was 6.0 (SD + 1.7, range 2-10) for clinicians and 7.2 (SD + 2.3, range 1-10) for staff. Clinician and staff mean scores for each subscale were 6.4 and 7.8 for immunizations, 5.9 and 7.4 for cancer screening, and 5.6 and 6.2 for diabetes care.

The scale demonstrated good internal consistency. Cronbach’s alpha for the total 12-item PMQ was 0.84 and 0.92 for clinicians and staff, respectively. Subscale score alphas ranged from 0.59-0.62 for clinicians and 0.62-0.91 for staff. Clinician and staff total PMQ scores within each clinic were highly correlated (r=0.77, p<.001), indicating a high convergence between clinician and staff perspectives. We found support for external validity with higher clinician and staff PMQ scores at the clinic level associated with better clinic quality of preventive and chronic care (r=0.35 and r=0.71, respectively, for clinician and staff).

Conclusions: The PMQ is a valid tool to measure the degree of implementation of PM by primary care practices. The PMQ holds promise both for use in research on emerging models of primary care and for pragmatic assessment of PM implementation and quality improvement.
Accurate Disease Attribution Is a Hurdle for Development of a Pay for Performance Reimbursement Model

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Background: With medical reimbursement shifting away from fee for service and toward quality incentives, it is important to understand the accuracy of data being used by insurance companies and clinics for quality incentive payouts.

Methods: In the setting of a university-based and NCQA recognized Patient-Centered Medical Home with a single payer, we sought to reconcile quality reports generated by our payer versus by our clinic’s data warehouse. Lists of patients were generated with diabetes, CHF, and COPD. Our private payer generated its list based on their methods that utilize billing data. Lists generated by the PCMH were generated by diagnoses on the “problem list” in the EMR and diagnosis billing data specific to that clinic. The two lists were compared and evaluated by chart review when they were discordant. Chart review included all data available such as labs, echo, radiology, specialty clinic notes, and PCP notes. Patients were then divided into groups of inclusion error by insurance, inclusion error by PCP, exclusion error by insurance, and exclusion error by PCP.

Results: Percentage of times that the Private Payer and the PCMH agreed varied by disease state. Based on the total number of patients included in a disease group by either the insurance company or the PCMH, 61.2% of the patients on the diabetes list, 32.1% of those on the CHF list, and 21.2% of those on the COPD list, were agreed upon by both the insurance company and the clinic. There were both errors of omission and inclusion by the insurance company. Errors of inclusion (those attributed to have the disease that did not actually have it) occurred for diabetes in 16.9% of the total attributed patients, 32.1% for CHF, and 78.8% for COPD. Errors of exclusion (those that had the disease but were not listed by the insurance company) occurred for 21.9% of diabetics, 35.7% of patients with heart failure, and 0% with COPD. A small percentage of errors of exclusion occurred with the PCMH. There were no errors of inclusion by the PCMH.

Looking at only the data generated by the insurance company, 21.7% of insurance-attributed diabetic patients were incorrect, and 26.3% of the patients on the final, verified diabetic list were missing. For CHF, 50% of insurance-attributed patients were incorrect, and 52.6% of patients on the verified CHF list were missing. COPD had the worst data accuracy with 78.8% of insurance-attributed patients being incorrect, and with no missing patients.

Conclusions: When entering the world of pay for performance, it is important to recognize the inherent inaccuracies of data based primarily on claims data. This clinic had the added luxury of a separate attribution process which allowed both sides to agree on the total pool of patients. For most clinic sites the quality data would be expected to have more errors due to discrepancies of attribution to PCP. For these reasons, it is important for clinics to have opportunities to collect their own quality data specific to disease attribution, and have a reconciliation process with payers participating in pay for performance initiatives.
Impact of a Population Management System on Physician Perceived Time Devoted to Preventive Cancer Screening

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**Background:** Advances in health information technology (HIT) allow the screening of patient populations independent of office visits. The impact of implementing such systems on the time physicians spend on these tasks during office visits is not known.

**Methods:** We surveyed primary care physicians (PCPs) before and after implementation of a novel visit-independent, HIT population management system (TopCare – Technology for Optimizing Population Care in a Resource-limited Environment) for preventive cancer screening as part of a randomized trial involving 18 primary care (PC) practices within an academic PC network. PCPs in practices where the HIT intervention was implemented screened a real-time patient roster of their patients who were overdue for screening, and could choose the method of patient contact (reminder letter, refer directly to scheduling delegate or patient navigator) or defer screening. In control practices, PCPs were not involved in screening overdue patients using the HIT intervention. All PCPs (intervention and control) were asked to complete a survey about time devoted to cancer screening tasks before implementation of the HIT system and after 1-year. We hypothesized that the total amount of effort devoted to cancer screening tasks during office visits would decrease over 1-year among PCPs who used the HIT system. PCPs were asked how much time they spent during a typical half-day clinical session on each type of cancer screening (breast, cervical, colorectal), and what proportion of effort took place when the patient was not present. Post-implementation surveys included additional questions about satisfaction with the HIT system for PCPs in the intervention group. Pre and post-implementation survey responses were compared with McNemar’s chi-square tests.

**Results:** Response rates were 76% (125 of 166) for pre-implementation and 52% (87 of 166) for post-implementation surveys, with 46% (76 of 166) PCPs completing both surveys. Among PCPs in the intervention group, the proportion who indicated they spent <10 minutes per clinical session devoted to cancer screening tasks increased over 1-year for breast (Pre: 49%, Post: 58%, p=0.48), cervical (Pre: 44%, Post: 65%, p=0.01), and colorectal (Pre: 26%, Post: 47%, p=0.05) cancer screening. There were no significant differences in pre and post-implementation survey responses for PCPs in control practices. Among of intervention PCPs who completed the post-implementation survey (47 of 90, 52%), the proportion who believed the process for managing patients overdue for cancer screening improved over the past year increased from 21% in the pre- to 79% in the post-implementation survey (p<0.001). Among intervention PCPs who indicated they screened their roster (79 of 89, 89%) and completed a post-implementation survey (41 of 79, 52%), 68% found the system to be easy to use, 63% indicated it made their time managing cancer screening more effective, and 88% were satisfied with the HIT system.

**Conclusions:** Primary care physicians who screened their roster of patients overdue for cancer screening using a visit-independent, population management HIT system for cancer screening reported less time spent devoted to cancer screening tasks during clinical sessions and no perceived increase in effort outside of a clinic visit.