

Home Health Agency Work Environments and Hospitalizations

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Background: An important goal of home health care is to assist patients to remain in community living arrangements. Yet home care often fails to prevent hospitalizations and to facilitate discharges to community living, thus putting patients at risk of additional health challenges and increasing care costs.

Objectives: To determine the relationship between home health agency work environments and agency-level rates of acute hospitalization and discharges to community living.

Methods and Design: Analysis of linked Center for Medicare and Medicaid Services Home Health Compare data and nurse survey data from 118 home health agencies. Robust regression models were used to estimate the effect of work environment ratings on between-agency variation in rates of acute hospitalization and community discharge.

Results: Home health agencies with good work environments had lower rates of acute hospitalizations and higher rates of patient

discharges to community living arrangements compared with home health agencies with poor work environments.

Conclusion: Improved work environments in home health agencies hold promise for optimizing patient outcomes and reducing use of expensive hospital and institutional care.

Key Words: home health, home care, nursing administration, work environment, preventable hospitalizations

(*Med Care* 2014;52: 877–883)

Home health is one of the nation's fastest growing health care sectors, with over 12,000 home health agencies serving approximately 4.5 million Medicare and Medicaid patients annually.^{1–3} The goals of home health care are to help patients to restore, maintain, or slow the decline of well-being and functional capacity, and to assist patients to remain in the community by avoiding hospitalization or admission to long-term care institutions.⁴

Although home health services are popular with patients and their families, Medicare budget reductions have constrained home health agency budgets.^{4–6} Because salary and benefits for nursing and therapy staff account for the majority of home health operating expenses, reduced Medicare payments may result in deterioration of the work environment in home health agencies, including increased workloads, strained relationships among coworkers, and pressure to ration care (eg, shorten number/length of visits).^{6,7} One possible consequence is difficulty avoiding hospital and long-term care admissions. This paper explores the relationship between the work environment and 2 home health care quality measures reflecting potentially avoidable acute hospitalization and long-term institutionalization.

BACKGROUND

Home health is a system of skilled services provided to patients in their homes by nurses, physical therapists, occupational therapists, speech and language therapists, and social workers under a physician's direction.⁴ Home health differs from other settings in that clinicians work in patients' homes, with administrative and support services provided from a central office.⁸ The work relationship between nurses and physicians involves less direct contact, and physicians depend more on nurses' assessments and input regarding the plan of care.⁸

Because of the intermittent nature of home health, the patient or their caregiver must be able to recognize and report

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This project was supported by grant numbers K99HS022406 from the Agency for Healthcare Research and Quality (O.J., PI), R01NR04513 and T32NR007104 from the National Institute of Nursing Research (L.H.A., PI); 053071 from the Robert Wood Johnson Foundation grant (L.F., PI); the American Nurses Foundation/Margretta Madden Styles Credentialing Research Grant funded by Stryker Medical, a division of the Stryker Corporation (O.J., PI); a John A. Hartford Foundation Building Academic Geriatric Nursing Capacity, Claire M. Fagin Fellowship (O.J.), and a grant from the Rita and Alex Hillman Foundation (L.H.A.). The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality, the National Institute of Health, or any of the foundations funding this work.

The authors declare no conflict of interest.

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Supplemental Digital Content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Website, www.lww-medicalcare.com.

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ISSN: 0025-7079/14/5210-0877

new or worsening symptoms, ensure that medications are taken as directed, and that diet and activity recommendations are followed. The challenges this often presents are underscored by the fact that, among patients receiving home health services as a Medicare benefit, 83% have 3 or more chronic conditions, 65% have incomes under 200% of the Federal Poverty Level, 36% live alone, and 29% have major functional limitations.⁹

Systematic research reviews of the international literature find home health care to consistently be effective in decreasing mortality, restoring functional ability, and reducing long-term institutional care, but not significantly better than other settings or usual care in preventing hospitalizations.^{10–12} Studies of US Medicare-certified home health agencies using multicomponent interventions including the National Campaign for Home Health Quality Improvement found nonsignificant or small reductions in hospitalizations.^{13–15} Home and community interventions associated with lower hospital admissions generally improved care and support during transitions (hospital to home), improved patient education and self-management, included multidisciplinary team management, and encouraged patient-centered care planning at the end of life.^{11–15}

The majority of formal home health care provided in the United States is reimbursed by Medicare or Medicaid in 60-day blocks of time, or care episodes. Payment for home health care is based on a comprehensive, in-home assessment of the patient's medical and functional status, and need for skilled nursing or restorative therapy. During fiscal years 2008–2013, the Centers for Medicare and Medicaid Services (CMS) reduced the home health payment rate by 16% (\$32 billion).¹⁶ Sequestration in 2011 further reduced home health payments by 2% over the next 10 years (\$6 billion), and the Patient Protection and Affordable Care Act reduced payments by an additional 3.5% each year for 2014–2017.¹⁶ The impact of these reductions on home health was the subject of a focus group with Medicare home health agency executives, who described management decisions directly impacting the home health nursing workforce:

*I'm afraid the only way to get creative may be to increase productivity and shorten lengths of stay. That will be tricky at a time when care expectations are increasing and employees also may face pay freezes while their employee share of health insurance costs increases. It is not a pretty picture.*⁶

Home health nurses work more hours than nurses in almost any other setting.¹⁷ Unlike home care aides, home health nurses are often paid on a salary or fee basis, making them exempt from overtime pay and protections. Even when home health nurses are paid on an hourly basis, working uncompensated overtime to complete required documentation is not uncommon. Additional productivity requirements adding to nurse workload, combined with other cost-saving measures implemented by home health agencies, may increase turnover of experienced nurses, and lead to lower home health care quality. Research in acute care hospitals indicates that modifiable organizational factors, such as managerial support of nursing practice and better

relations with physicians, can exert a significant effect on patient outcomes.^{18,19} The influence of organizational factors on patient outcomes must now be considered in home health care.^{20,21}

Work Environment in Home Health

In home care, as in hospitals, effective and efficient nursing care requires adequate resources, managerial support, and collegial relations with doctors, and other members of the interdisciplinary care team.^{7,21–25} Elements of a good work environment include the conditions necessary to provide good patient care and retain qualified employees. In concrete terms, this refers to adequate staffing and resources necessary to provide safe and timely patient care; and collaboration between nurses and physicians is critical for optimizing patient care.^{26–27} In addition, strong nursing leadership and managerial support moderate job stress and help to create a culture where nurses listen to, support, and advocate for patients, families, and caregivers.⁷

This study seeks to fill a knowledge gap by determining whether the work environment in home health is associated with patient outcomes, specifically the publicly reported rates of hospitalization and discharge to community living arrangements. The measure of acute care hospitalizations is the CMS priority indicator of home health quality and safety, and is publicly reported in the Home Health Compare (HHC) database.²⁸ “Community discharge from home health” reflects the proportion of patients who remain in community living arrangements and are not admitted to an inpatient facility.²⁹

METHODS

This cross-sectional study links nurse survey data,³⁰ aggregated to the home health agency level, with a publicly available federal database²⁸ containing home health agency-level quality measures. The final agency sample comprised 118 Medicare-certified and Medicaid-certified home health care agencies in California, New Jersey, and Pennsylvania, and the nurse sample comprised 1436 registered nurses (RNs) working in home health care. Characteristics of the work environment were measured using the Practice Environment Scale of the Nursing Work Index (PES-NWI), included in the nurse survey. Nurses served as informants about their home health employing organizations using a design that has been effective in studying the outcomes of hospital care.³¹ The patient outcomes of interest were agency-level risk-adjusted acute care hospitalization and discharge to community measures.

Study Sample

Nurse survey data were collected as part of the University of Pennsylvania Multistate Nursing Care and Patient Safety Study in 2006.³⁰ The survey was mailed to a random 40%–50% sample of all RNs licensed and living in California, New Jersey, and Pennsylvania. A response rate of 39% resulted in a sample of 79,158 RNs, of which 3739 (4.7%) worked in home health. The proportion of home health nurses responding to the survey in 2006 is consistent with the increase of nurses working in home health observed

in the National Sample Survey of Registered Nurses between 2004 (3.8%) and 2008 (6.4%).¹⁷ A survey of nonrespondents using more extensive contact methods achieved a 92% response rate and revealed no response bias of substantive importance.³¹ Nurses identified their employing agency by name. Internet searches and phone calls to home health agencies were used to reconcile names and addresses of home health agencies, and to match to Medicare-certified home health agencies for each state, resulting in an initial sample of 453 agencies. Home health agencies were included in this analysis if they had at least 5 nurse respondents, which yielded 118 agencies.

Measures

Agency characteristics and outcomes were drawn from the calendar year 2006 CMS HHC database. The specific outcome measures used were the risk-adjusted proportions of acute care hospitalizations and discharges from home health to the community (remaining in their home rather than transitioning to a nursing home or other inpatient or institutional setting).²⁸ Risk adjustment is based on estimates from statistical models that used a national sample of home health agency patients to predict individual outcomes from over 50 patient-level risk factors, employing data collected by RNs, or physical, occupational, or speech therapists during the home health admission assessment.²⁸ A limitation of the HHC database is the potential for upcoding (inflating patient acuity to maximize payment) similar to what occurred in hospitals after the introduction of the prospective payment system.²⁹ Because the HHC measures of changes in patients' functional status are more sensitive to agency variation in coding practices than measures of utilization are, this study focused on the outcomes of acute hospitalization and community discharge.²⁹

All nursing characteristics of home health agencies were drawn from the University of Pennsylvania Multistate Survey of Nursing Care and Patient Safety. Nurses provided detailed information about their work environment, nursing experience and education, job satisfaction, and burnout.³¹ PES-NWI (or PES)³² was included in the nurse survey. The PES includes items about the nurse work environment, that is, if there is enough time, and staff, to provide quality patient care; if nurses are involved in organizational decision making; if there are opportunities for nurse education and advancement; if nurses and physicians have good working relationships; if there is continuity of patient care assignments; and if good nursing management and leadership are present. Scores on the PES subscales and composite (mean of 5 subscales) indicate the extent to which respondents agree that supportive traits are present and can range from 1 (strongly disagree) to 4 (strongly agree), with higher scores indicating a more supportive practice environment. Psychometric evaluation has established the reliability and validity of the measure in hospitals, home health agencies, and nursing homes.^{19,21,32} The agency-level average of nurses' PES composite score was used to categorize each agency as having a poor (lower quartile), mixed (middle 50%), or better (upper quartile) work environment.

Analyses

Descriptive and correlational methods were used to describe the home health nurse and agency samples. Differences in nurse demographics, nursing workforce characteristics and outcomes, and patient outcomes were described for each work environment category. Robust linear regression models were used to estimate the relationship between the work environment and the agency outcomes. Covariates were state (California, New Jersey, or Pennsylvania), average level of nurse burnout, and the interaction between nurse burnout and the home health agency work environment.⁷ Separate regression models were estimated to assess the effects of each work environment subscale on the outcomes (see SDC, Supplemental Digital Content 1, <http://links.lww.com/MLR/A766>). In all models, the level of multicollinearity was very low (variance inflation factor < 2).

RESULTS

Characteristics of Home Health Agencies and Nurses

The majority (76%) of the 118 Medicare-certified Home Health agencies studied were nonprofit (Table 1). All sample agencies provided all essential services (nursing, physical, occupational, and speech therapy, social work, and home health aides). These agencies employed seasoned nurses with an average of 20 years of nursing experience. In terms of education, 39% of the nurses had a bachelor's degree (or higher) in nursing and 27% had specialty certification. Overall, 83% of the nurses reported being satisfied or very satisfied with their job. Although only 12% intended to leave their position in the coming year, 29% had a high level of emotional exhaustion reflecting burnout. In addition, 21% of nurses reported their workload contributed to missing changes in their patients' health condition, and 23% reported important information was lost during patient transfers.

PES Internal Consistency and Descriptive Statistics

The PES composite and all subscales were highly reliable ($\alpha=0.95$ for the composite; 0.82–0.90 for the subscales). The mean PES composite score of 2.99 indicated that the typical practice environment was favorable: on average, nurses "agreed" (response of 3="agree") that the valued organizational traits were present in the average agency. The range of 2.38–3.76 across agencies reflected that at the extremes, some agencies "nurses" responses tended toward "disagree" (response of 2="disagree") and others tended toward "strongly agree," which was the highest possible value (response of 4=strongly agree). Home health agencies classified as having poor work environments (bottom quartile of PES composite scores) had an average reported shift length 1 hour longer (9.8 vs. 8.8) than agencies ranked "better" (top quartile). In better work environments, more nurses were satisfied with their job, and fewer were burned out (Table 1). The agency-level PES composite score was inversely correlated (−0.65) with the percent of burned out nurses.

TABLE 1. Home Health Agency Characteristics and Descriptive Results (N=118)

Agency Ranking by Work Environment	n (%) or Mean (SD)				
	Range	All	Poor*	Mixed [†]	Better [‡]
Home health agency characteristics					
State (within state) [n (%)]					
California		24 (100)	5 (21)	12 (50)	7 (29)
New Jersey		40 (100)	4 (10)	29 (73)	7 (18)
Pennsylvania		54 (100)	14 (26)	26 (48)	14 (26)
For-profit (proprietary) ownership [n (%)]		25 (21)	6 (26)	15 (22)	4 (14)
Proportion of patients hospitalized [§]	0.11–0.40	0.25 (0.06)	0.26 (0.07)	0.25 (0.06)	0.24 (0.06)
Proportion of patients discharged to the community (after home health) [§]	0.43–0.88	0.72 (0.07)	0.70 (0.09)	0.72 (0.07)	0.73 (0.06)
Nursing-related characteristics					
Work environment (PES-NWI)	2.38–3.76	2.99 (0.26)	2.6 (0.11)	3.0 (0.11)	3.3 (0.12)
Nurse manager leadership and support	2.18–3.95	3.13 (0.35)	2.7 (0.25)	3.1 (0.24)	3.5 (0.18)
Staffing and resource adequacy	1.95–3.90	2.87 (0.36)	2.4 (0.25)	2.8 (0.23)	3.3 (0.23)
Nursing foundations for quality of care	2.52–3.93	3.18 (0.26)	2.9 (0.16)	3.2 (0.16)	3.5 (0.16)
Nurse participation organizational affairs	1.65–3.70	2.75 (0.36)	2.3 (0.26)	2.7 (0.21)	3.2 (0.25)
Collegial nurse-physician relations	2.33–3.70	3.02 (0.27)	2.8 (0.26)	3.0 (0.22)	3.3 (0.24)
Proportion of nurses BSN degree or higher	0.0–1.00	0.39 (0.20)	0.34 (0.20)	0.41 (0.20)	0.39 (0.21)
Proportion of specialty-certified nurses	0.0–0.83	0.27 (0.16)	0.24 (0.16)	0.25 (0.16)	0.33 (0.18)
Proportion of nurses part time	0.0–0.67	0.19 (0.15)	0.17 (0.18)	0.21 (0.14)	0.17 (0.16)
Proportion of nurses per diem	0.0–0.50	0.12 (0.12)	0.07 (0.09)	0.12 (0.11)	0.15 (0.15)
Average shift length (hours)	6.25–11.5	9.07 (1.02)	9.8 (1.00)	8.9 (0.96)	8.8 (0.95)
Age (years)	37.8–54.4	50.0 (3.70)	50.0 (4.60)	50.2 (3.20)	49.5 (3.90)
Years of experience at current agency	7.67–34.0	20.3 (4.90)	20.1 (4.20)	20.5 (4.90)	20.1 (5.60)
Proportion of nurses satisfied with job	0.33–1.00	0.84 (0.13)	0.72 (0.17)	0.84 (0.10)	0.94 (0.08)
Proportion with high-emotional exhaustion	0.0–1.00	0.29 (0.18)	0.45 (0.21)	0.29 (0.15)	0.17 (0.14)
Proportion with high-depersonalization	0.0–0.4	0.10 (0.11)	0.11 (0.09)	0.09 (0.11)	0.11 (0.12)
Proportion with low personal-accomplishment	0.0–0.5	0.14 (0.13)	0.16 (0.16)	0.14 (0.12)	0.10 (0.12)
Proportion of nurses intending to leave job	0.0–0.67	0.12 (0.13)	0.20 (0.20)	0.12 (0.09)	0.05 (0.08)

The agency-level average of nurse rating of the work environment (PES) was used to rank each home health agency as having a:

*Poor (lower quartile, n=23).

[†]Mixed (middle 50%, n=67).

[‡]Better nurse (upper quartile, n=28) work environment.

[§]Home Health Compare (HHC) Data for agency-level patient outcomes is risk-adjusted for over 50 patient-level factors.

^{||}Difference across categories of Home Health Agencies significant at <0.001.

Nurse Practice Environment as a Predictor of Patient Outcomes

Across home health agencies, risk-adjusted rates of acute care hospitalization ranged from 11% to 40% (mean 25%, SD 6). These rates were significantly higher in Pennsylvania than in California, and highest in New Jersey. Reflecting a similar pattern, the risk-adjusted rate of community discharge from home health ranged from 43% to 88% of patients (mean 72%, SD 7). Controlling for state and nurse burnout, agencies with better work environments had lower hospitalization rates and higher community discharge rates than agencies with poor environments (Table 2). In the average agency, or in agencies with average levels of nurse burnout, each SD increase in the PES composite score is associated with a 2 percentage point decrease in hospitalizations and a 3 percentage point increase in community discharges. Moreover, in models predicting both outcomes, the significant interaction between work environment and nurse burnout implies that the work environment effect was more pronounced in agencies where nurses experienced greater burnout.

DISCUSSION

The primary findings of this study were that home health agencies with good environments have lower rates of

nurse burnout and acute care hospitalizations, and higher rates of discharges to community living. A secondary finding is that the positive effect of good work environments on the 2 patient outcomes was especially pronounced in agencies with greater nurse burnout. Most likely, agencies where more nurses are burned out are likely to be agencies with fewer

TABLE 2. Effects of Work Environment and Nurse Burnout on Risk-adjusted Percentage of Patients Experiencing an Acute Hospitalization or Community Discharge From Home Health Agencies (N=118)

Variables	Acute Hospitalizations*			Community Discharge [†]		
	Coefficient	SE	P	Coefficient	SE	P
Work environment [‡]	-2.09	0.658	0.002	2.83	0.754	0.000
Nurse burnout [§]	-0.38	0.130	0.004	0.44	0.148	0.004
Interaction	-0.14	0.067	0.045	0.18	0.077	0.021
New Jersey [¶]	6.21	1.392	0.000	-5.09	1.595	0.002
Pennsylvania [¶]	4.61	1.311	0.001	-4.27	1.501	0.005
Constant	20.40	1.104	0.000	76.24	1.264	0.000

*Acute hospitalizations model statistics $F_{5112}=8.19, P<0.001, R^2=0.268$.

[†]Community discharge model statistics $F_{5112}=6.90, P<0.001, R^2=0.236$.

[‡]Work environment = standardized, agency-level score on PES-NWI.

[§]Burnout = centered, agency-level score for emotional exhaustion (SD=5.2) measured on Maslach burnout inventory.

^{||}Interaction between work environment and nurse burnout.

[¶]Reference group is State of California.

resources and higher workloads; in such agencies, the work environment makes a bigger difference.

The work environment in home health has received little attention despite increasing agency size and complexity, higher patient acuity, and productivity pressure on nurses. Inadequate care coordination is a consequence of poor work environments, resulting in costly, potentially harmful, and often avoidable hospitalizations.³³ The findings that better work environments for home health nurses are associated with fewer hospitalizations and more community discharges are consistent with the evidence showing significant associations between the work environment, staffing, and patient outcomes in hospital settings.^{26,34}

Our findings build on evidence that the work environment in home health agencies, similar to hospitals, and nursing homes,^{19,26,35} is highly valued by home health nurses^{21,36} and has been associated with quality of care and patient outcomes reported by home health nurses.³⁷ Moreover, home health nurse staffing and workload have been associated with nurse-reported care quality and patient preparedness for discharge.²¹ This is the first study to investigate the effect of home health work environment on publicly reported patient outcomes and one of the first to utilize the CMS HHC outcome measures for hospitalization and community discharge.

Prior research has considered which work environment elements are most important to attract and retain nurses in home care^{23,38,39} and which elements nurses perceive to be associated with patient outcomes and quality of care.^{20,36} Collectively, these studies found variation between agencies in nurse satisfaction and perception of the quality of care provided. However, with the exception of Flynn and colleague's work on the nurse-reported outcome of patients' readiness for discharge from home health services, the studies had limited ability to demonstrate a relationship between the work environment and patient outcomes.^{20,21} In home health agencies, as in hospitals, and nursing homes, effective and efficient nursing care requires adequate resources, managerial support, and collegial relations with other members of the interdisciplinary care team.^{7,17,18–20}

The elements of a good work environment are foundational for transitional care models that have demonstrated effectiveness in reducing hospitalizations. However, home health providers are not generally recognized as a critical partner in managing care transitions.^{40–43} Transitional care models frequently target patients with chronic conditions and a lack of postdischarge coordination between health care providers, which is a major cause of readmissions.⁴² The Alliance for Home Health Quality and Innovation recently released a Home Health Care Transitions Tool Kit of best practices for receiving patients from an acute hospitalization.⁴⁰ Pillars of these best practices are a patient-centered focus, medication management, communication and care coordination, timely follow-up by all health care team members, and patient-activated education and coaching.⁴⁰ Similar to Naylor et al's Transitional Care Model,⁴² the Home Health Care Transitions model begins with patient assessment, education, and care coordination before hospital discharge.⁴⁰ With the anticipated shift to a patient-centered

bundled payment for care across settings, hospital liaisons may emerge as key providers of transitional care.⁴⁴

Home health executives and supervisors have described pressure to increase nurse workload due to budget constraints.^{6,7} Nurses are reporting "...we will go to our supervisors and say I'm at my max...I can't take anymore (cases) and to me that should be addressed by the head, and I don't think it is."⁷ These qualitative findings underscore a recent national study of over 1000 home health agencies that found nurse caseloads ≥ 27 were associated with lower patient satisfaction scores, and productivity expectations ≥ 8 visits/d were associated with lower quality of care.⁴⁵

In our study, the average rate of burnout (ie, a high degree of emotional exhaustion) among home health nurses was 29%. Only in the bottom quartile of agencies (ranked by work environment scores) were rates of burnout similar to those reported by nurses in hospitals.³⁴ With waves of increased financial pressure on the home health industry in 2008, 2011, and 2014, it would not be surprising if burnout among home health nurses has risen since 2006. Our finding that the work environment is even more important for patient outcomes when there is a high level of nurse burnout echoes the events reported in the book *Code Green*⁴⁶:

In one of BIDMC's most successful, though perhaps not deliberate, cost-containment ... strategies, nurses took it on themselves to maintain the high standards of patient care. The high expectations that they held for themselves, especially those nurses who had been trained to think of themselves as "professionals," compelled nurses to try to meet patients' needs despite resource constraints. ... If resources were indeed too lean for nurses to provide safe care at a reasonable pace and within the boundaries of their shifts, then nurses' additional efforts and self-sacrifice allowed the hospital to realize cost savings at their expense.

Research is needed to develop and refine methods for measuring the workload of home health nurses and the relationship between workload and patient outcomes. In hospitals, nurse workload incorporates the number of patients a nurse cares for, patient acuity, and throughput. In home health, caseload size and productivity (visits/day), type/length of visit, and patient acuity, are important but not sufficient to fully understand nurse workload. Comparisons of productivity over time or across agencies must also consider non-visit-related time, including travel, coordination of care, and documentation. Finally, there are differences in workload associated with positions that are salaried or based on a regular hourly wage compared with positions that are paid on a per-diem or per-visit basis.

The inclusion of only Medicare-certified home health agencies reporting outcomes in HHC is a limitation of our study. The study scope was limited to 118 agencies in 3 states. Small agencies were underrepresented in the sample due to the minimum number of nurse respondents' criterion for agency inclusion in the sample. For reference, approximately 80% of Medicare-certified home health agencies in the United States report employing <22 RNs.⁴⁷ Our data preceded implementation of the ACA and changes in Medicare payment policy that reduced payments and profit

margins in home health care. Since the time our data were collected, the additional financial constraints in the home health industry may have amplified the relationships we documented. The cross-sectional study design cannot establish causation, only association. However, it is unlikely that higher rates of hospitalization or lower rates of community discharge caused poorer agency work environments. The lack of data on home health nurse workload is another limitation. Other important variables may have been omitted that were not available in our nurse survey data, and not included in the HHC risk-adjustment formula.

The need for interventions within the control of home health agencies is intensifying as CMS lowers payments for home health services while increasing home health accountability for patient outcomes. The relationship between the home health work environment, hospitalizations, and community discharges presents an opportunity for home health administrators to improve care. Although home health nurses are similar to hospital nurses in their value of the American Nurses Credentialing Center (ANCC) "Essentials of Magnetism" dimensions, only 1 home health agency in Illinois has received ANCC recognition for nursing excellence.^{48,49} Home health agencies may benefit from external recognition of nursing excellence through the ANCC Magnet Recognition Program or Pathway to Excellence Program.⁴⁸

An important objective of health system reform is making it possible for the frail, ill, and disabled to remain safely in community settings for as long as possible. Our research suggests that organizational innovations at the home health agency level to enable front-line home health nurses to be efficient and effective would go a long way toward helping patients and families achieve their personal preferences to remain at home.

ACKNOWLEDGMENTS

The authors gratefully acknowledge statistical consultation from Douglas Sloane; data set preparation and management by Timothy Cheney and Evan Wu; research assistants: Breanna Baraff, Carly Rubin, and David Tran; and the thoughtful suggestions for revisions to the manuscript from Margo Brooks Carthon and anonymous reviewers.

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