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AGING & HEALTH

Initiative To Reduce Avoidable Hospitalizations Among Nursing Facility Residents Shows Promising Results

ABSTRACT Nursing facility residents are frequently admitted to the hospital, and these hospital stays are often potentially avoidable. Such hospitalizations are detrimental to patients and costly to Medicare and Medicaid. In 2012 the Centers for Medicare and Medicaid Services launched the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents, using evidence-based clinical and educational interventions among long-stay residents in 143 facilities in seven states. In state-specific analyses, we estimated net reductions in 2015 of 2.2–9.3 percentage points in the probability of an all-cause hospitalization and 1.4–7.2 percentage points in the probability of a potentially avoidable hospitalization for participating facility residents, relative to comparison-group members. In that year, average per resident Medicare expenditures were reduced by $60–$2,248 for all-cause hospitalizations and by $98–$577 for potentially avoidable hospitalizations. The effects for over half of the outcomes in these analyses were significant. Variability in implementation and engagement across the nursing facilities and organizations that customized and implemented the initiative helps explain the variability in the estimated effects. Initiative models that included registered nurses or nurse practitioners who provided consistent clinical care for residents demonstrated higher staff engagement and more positive outcomes, compared to models providing only education or intermittent clinical care. These results provide promising evidence of an effective approach for reducing avoidable hospitalizations among nursing facility residents.

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Each year in the United States, more than 25 percent of long-stay residents of nursing facilities are hospitalized, and a substantial portion of those hospitalizations are considered potentially avoidable.[1–4] One study reported that 47 percent of hospitalizations among these residents were potentially avoidable, for an estimated cost of $1.9 billion to Medicare and Medicaid in 2005.[3] Unnecessary hospitalizations adversely affect patient health by increasing the risk of complications and reduced functional status.[5–7] Transitioning residents from one care setting to another can cause physiological and psychological disturbances and exacerbate existing health conditions.[8] Therefore, reducing

excess hospitalizations from nursing facilities has remained a policy concern for years. It is believed that many hospitalizations could be prevented through adequate care and carefully monitoring and managing changes in residents' condition within the nursing facility.[1–4]

In late 2012 the Medicare-Medicaid Coordination Office of the Centers for Medicare and Medicaid Services (CMS) launched the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents. The purpose was to test the effectiveness of evidence-based clinical and educational interventions in reducing potentially avoidable hospitalizations—an important aspect of improving care and quality of life for long-stay residents of nursing facilities. Using a competitive process,[9] CMS selected seven Enhanced Care and Coordination Provider (ECCP) organizations to design and implement interventions to achieve the initiative's goals. Each organization was in a different state— Alabama, Indiana, Missouri, Nebraska, Nevada, New York, and Pennsylvania—and was to partner with at least fifteen nursing facilities in its state. The ECCPs were academic institutions, quality improvement organizations, health care systems, and a hospital foundation.

In choosing the ECCPs, CMS gave preference to applicants in geographic locations with high Medicare costs and hospital readmission rates, and where a high percentage of nursing facility residents were enrolled in both Medicare and Medicaid. All nursing facilities that partnered with each ECCP had to be certified by both Medicare and Medicaid and have an average census of a hundred or more residents across all facilities within the ECCP. Within CMS guidelines, the ECCPs designed their own models, each consisting of a specific set of multiple interventions to affect the delivery of care in nursing facilities.

In this article we report results of an evaluation conducted by RTI International of the initiative's impact, based on analyses of quantitative and qualitative data for 2014 and 2015 for long-stay residents—defined as those who were in a nursing facility for at least 101 days or those whose length-of-stay in the facility was less than 101 days but who had no active discharge plan in place. We report effect estimates of ECCP interventions on all-cause and potentially avoidable hospitalizations and related Medicare expenditures by comparing intervention participants to similar residents from a matched comparison group of facilities. We also present findings from qualitative data collection, which provide insights on the implementation of the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents and offer context for the quantitative analysis.

The Initiative

The initiative consisted of seven Enhanced Care and Coordination Provider models of interventions in seven states aimed at improving the overall health and health care of participating long-stay residents of nursing facilities, with the primary goals of reducing potentially avoidable hospitalizations, improving quality of care, and decreasing health care spending. The initiative began in February 2013 and ended in October 2016. CMS focused on long-stay residents because they constitute a high-risk, high-cost population, and most of them are eligible for both Medicare and Medicaid. A total of 143 nursing facilities participated in the initiative, each partnering with an ECCP in its state to implement specific clinical or educational interventions, or both.

Although CMS provided guidelines for intervention design and required that each model contain certain key elements, ECCPs had the flexibility to select and implement specific interventions. The required elements included hiring on-site facility staff to focus on improvements related to avoidable hospitalizations, such as medication management and improving communication and coordination among nursing facility staff members, residents' primary care providers and specialists, pharmacies, and hospitals. Optional elements included health information technology tools, dental care, secure text messaging, and administrative leadership education. Although not required to do so, all of the ECCPs incorporated an end-of-life focus.

All ECCPs were required to employ nursing staff to provide full- or part-time support to the nursing facilities. This could include registered nurses (RNs), advanced practice registered nurses (APRNs), or nurse practitioners (NPs). ECCP nurses could provide direct patient care or serve as advisers to existing facility staff. In five ECCPs, the nurses provided direct patient care, patient oversight, and education to nursing facility staff. In the other two ECCPs (those in Alabama and New York), the ECCP nurses served as advisers who trained facility staff, analyzed facility-level hospitalization trends and presented these data to their facilities, and shared best practices—but did not provide clinical care. Additionally, some ECCPs also hired other staff members who were not embedded in a facility for information technology support and data analysis, and some partnered with pharmacists for medication reviews.

To improve care processes and communication among providers, all ECCPs chose to use a nursing home quality improvement program known as Interventions to Reduce Acute Care Transfers (INTERACT). This program was devel-

oped by a team led by Joseph G. Ouslander for the purpose of improving care and reducing potentially avoidable transfers to the hospital through the early identification, assessment, and documentation of, and communication about, changes in the status of residents in skilled nursing facilities.[10] ECCPs used one or more of the following INTERACT tools: The Stop and Watch Early Warning Tool assists staff members who witness a change in a resident's condition to notify nurses. "Care Paths," which are symptom specific, provide decision support tools for nurses. The Situation, Background, Assessment, and Recommendation (SBAR) tool provides a template for nurses to use in assessing a resident's condition before notifying a physician of a change in that condition. The Nursing Home–Hospital Transfer form organizes resident records to simplify communication between staff at the two institutions involved in the transfer. Lastly, the Quality Improvement Tool for Review of Acute Care Transfers facilitates review of acutely ill residents transferred to the hospital by facility staff members, often with the goal of determining whether the hospitalization was avoidable. ECCP nurses trained facility staff to use these tools.

Additionally, all ECCP models focused on related care processes, such as reviewing residents' medications and encouraging end-of-life conversations and the use of advance directives.

Study Data And Methods

We used a mixed-methods approach to evaluate the effects of the Enhanced Care and Coordination Provider interventions on resident outcomes. We conducted a quantitative analysis of secondary data (claims and assessments) using difference-in-differences multivariate regression models to compare resident outcomes between the ECCP intervention group and a matched comparison group in each state. We also conducted a qualitative analysis of primary data collected from site visits, interviews, and surveys to understand the processes, successes, challenges, lessons learned, and unintended consequences of the implementation of the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents. For a detailed description of our methodology, see the online Appendix.[11]

DATA We used Medicare eligibility and enrollment data and assessments for the period 2011–15 from the CMS Minimum Data Set, version 3.0, to determine each resident's eligibility for inclusion in the evaluation and to obtain his or her characteristics. We used Medicare claims for the same period to identify resident hospitalizations

and related Medicare expenditures. Residents were eligible to participate in the initiative if they were enrolled in fee-for-service Medicare, Medicaid, or a Veterans Affairs plan and if they had resided in the facility for at least 101 days or had an assessment in the Minimum Data Set indicating that there was no active discharge plan in place. These criteria were applied to residents in both ECCP and comparison facilities. To select comparison facilities and control variables used in multivariate analysis, we used nursing facility characteristics from the CMS Certification and Survey Provider Enhanced Reports system (2012 data for comparison group selection and 2011–15 data for control variables).

To understand the specific components of each ECCP model and how those models functioned within the nursing facilities, we collected qualitative data annually in the period 2013–15 from in-person annual site visits with the leadership of each ECCP and a rotating selection of four participating facilities in each state, annual telephone interviews with one or more facility staff members in all facilities not visited in person, and an annual web-based survey of administrators from all participating facilities. A one-time web-based survey of comparison-group facilities was conducted in 2015. All site visit and telephone interview data were coded using NVivo software to identify common themes within and across ECCPs. Survey data were analyzed to capture changes in facility management and operations related to the initiative.

COMPARISON FACILITIES We used propensity score models to identify facilities with characteristics similar to the ECCP intervention facilities in the same states. Matching was based on characteristics such as staffing levels and mix, bed size, payer mix, chain membership, ownership type, resident case-mix, and presence of special care units. These were measured in 2012, the year before implementation of the initiative began. To ensure sufficient sample size, we matched two comparison facilities to each ECCP facility in all states except Nevada—where we included all non-ECCP facilities in the comparison group because there were fewer non-ECCP facilities than ECCP facilities (for more details about the modeling, see the Appendix).[11]

We identified 61,636 intervention and comparison facility residents who met the eligibility criteria in 2015, and we included them in the annual analytic sample across all seven states for that year. Of these residents, 22,442 were from 143 ECCP facilities, and 39,194 were from 262 comparison facilities. Sample sizes in the two groups combined varied across the seven states, ranging from 4,424 residents in Nebraska to 18,560 residents in New York.

OUTCOME VARIABLES We measured ECCP intervention effects for four outcome variables: any all-cause hospitalization, any potentially avoidable hospitalization, and Medicare expenditures associated with each type of hospitalization. We identified potentially avoidable hospitalizations using the definition developed by Edith Walsh and colleagues, based on a list of conditions considered by subject matter experts as potentially preventable or manageable in nursing facilities.[3]

CONTROL VARIABLES Control variables were resident characteristics and facility characteristics. Resident characteristics were demographic information, number of days in each year of eligibility for the initiative (exposure period), category of long-stay status (a stay of 101 or more days or no active discharge plan indicated), clinical conditions, and comorbidities grouped as Hierarchical Condition Categories.[12] Facility characteristics were staffing levels and mix, bed size, payer mix, chain membership, ownership type, resident case-mix, and presence of special care units (for a complete list of variables, see the Appendix).[11]

STATISTICAL ANALYSIS We conducted state-specific multivariate regression analyses with a difference-in-differences design to estimate the effects of ECCP interventions on the four outcomes. The regression model produced estimated effects attributable to ECCP interventions in a given year, accounting for both the general trends over time unrelated to the initiative and the baseline difference in outcomes between residents of ECCP facilities and those of comparison facilities.

To measure the effect of ECCP interventions on the probability of having any hospitalization or any potentially avoidable hospitalization, we estimated a logistic regression model using the generalized estimating equation method to estimate parameters and adjust standard errors for resident clustering in facilities. For the expenditure outcomes, we used a two-part model that first estimated the probability of having any positive expenditure and then estimated the expenditure amount, conditional on having a positive expenditure. A logistic model was used for the first part and a generalized linear model with a log-link function and gamma distribution for the second. Both parts accounted for resident clustering in facilities. Then, using predicted values from both parts of the model, we calculated a predicted expenditure for all residents included in the analysis sample, both service users and nonusers.

We reported the average marginal effects of ECCP interventions on each outcome in 2014 and 2015, along with estimated 90 percent con-

fidence intervals (the standard for this CMS evaluation). Marginal effects are expressed in meaningful units for ease of interpretation.

LIMITATIONS Several limitations should be noted. First, as noted above, the comparison group in Nevada was limited to a small group of non-ECCP facilities, in contrast to the larger matched groups used in other states. Therefore, the estimated ECCP effects in Nevada should be interpreted with caution.

Second, in our 2015 web-based survey of comparison facilities, 95 percent of the responding facilities reported having introduced policies or procedures designed to reduce avoidable hospitalizations of long-stay residents since January 2011. Additionally, in our 2015 web-based survey of ECCP nursing facility administrators, 80 percent of the responding facilities reported being engaged in similar concurrent efforts that were unrelated to the initiative. When initiatives co-occur with other policy or practice changes, it becomes challenging for an evaluation to disentangle potential confounding caused by these efforts and attribute an effect to the specific initiative itself. While we acknowledge this limitation, any effect of these policies on the comparison facilities would bias our estimates toward no effect. In addition, the efforts unrelated to the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents in ECCP facilities may be similar to the practices in comparison facilities, especially when these were initiated by the corporations owning facilities in both groups. Moreover, it is unlikely that the concurrent activities in the facilities, implemented without ECCP support and resources, would be as targeted and effective as the ECCP efforts.

A related limitation is that we were not able to parse the effects of specific components of ECCP models. Instead, we could evaluate each model only as a whole. Moreover, different ECCPs may have used the same model components (for example, INTERACT tools or medication review), but with different implementation methods. Only the effects on Medicare services are estimated, as these are the acute care services affected. Full Medicaid data—not available in a timely manner—would show much smaller effects when analyzed.

Study Results

QUANTITATIVE ANALYSIS FINDINGS Key features of Enhanced Care and Coordination Provider models are summarized in Exhibit 1 (for a detailed description of the models, see the Appendix).[11]

Across all four outcomes and seven states, the

EXHIBIT 1

Key features of ECCP models in the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents in seven states

Feature	Organization name						
	Alabama Quality Assurance Foundation Nursing Facility Initiative (AQAF-NFI)	(Indiana) Optimizing Patient Transfers, Impacting Medical Quality, and Improving Symptoms: Transforming Institutional Care (OPTIMISTIC)	Missouri Quality Initiative for Nursing Homes (MOQI)	(Nebraska) Catholic Health Initiatives (CHI)	(Nevada) Admissions and Transitions Optimization Program (ATOP)	New York Reducing Avoidable Hospitalizations (NY-RAH)	(Pennsylvania) University of Pittsburgh Medical Center: Reduce Avoidable Hospitalizations using Evidence-based Interventions for Nursing Facilities (UPMC-RAVEN)
BASIC INFORMATION							
Organization type	Quality improvement organization	University research program	University research program	Not-for-profit health care system	Quality improvement organization	Hospital foundation	Not-for-profit health care system
Number of partnering facilities	23	19	16	14	24	29	18
USE OF REGISTERED OR HIGHER-LEVEL NURSES							
NP or APRN		•	•	•	•		•
RN	•	•			•	•	•
ROLE OF NURSE							
Clinical care or assessment		•	•	•	•		•
Prescriptive authority (medications and labs)		•		•	•		•
Education	•	•	•	•	•	•	•
Nurse weekly schedule (days in each facility)	5	5	5	1–4	2–3	5	5
MEDICATION MANAGEMENT							
Polypharmacy reduction	•	•	•	•			•
Antipsychotic medications reduction	•		•	•			•
Medication review	•	•	•	•	•	•	•
USE OF INTERACT TOOLS TO IMPROVE COMMUNICATION							
SBAR[a]	•	•	•	•	•	•	•
Stop and Watch[b]	•	•	•	•	•	•	•
Transfer form[c]	•		•		•	•	•
QI tool[d]	•		•		•		•
Care Paths	•	•			•	•	
END-OF-LIFE PLANNING							
Advance directives		•			•	•	•
Staff training or discussion	•	•	•[e]	•	•	•	•
OPTIONAL FEATURES SPECIFIC TO EACH ECCP							
	Leadership training; Quality Assurance and Performance Improvement teams	None	E-tablets for NPs; CareMail; CareView portal	Dental care provided by visiting dental hygienists	Web registry of residents with risk assessments and tools	Direct messaging; AMDA's Know-it-All Before You Call cards	Telemedicine with after-hours NP support

SOURCE Authors' analysis. **NOTES** ECCP is Enhanced Care and Coordination Provider. NP is nurse practitioner. RN is registered nurse. APRN is advanced practice registered nurse. INTERACT is Interventions to Reduce Acute Care Transfers. AMDA is American Medical Directors Association. [a]Situation, Background, Assessment, and Recommendation Tool. [b]Stop and Watch Early Warning Tool. [c]Nursing Home–Hospital Transfer Form. [d]Quality Improvement Tool for Review of Acute Care Transfers. [e]MOQI is using "The Conversation Project" framework for end-of-life planning discussions.

estimated effects of ECCP interventions had negative signs in both 2014 and 2015 (Exhibits 2 and 3), which is evidence of a relative reduction in hospitalizations and related Medicare expenditures in each year as a result of the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents. Nonetheless, the consistency and strength of the estimated effects varied by state, outcome, and year. In most but not all states with significant results, the estimated ECCP effects were larger in 2015 than in 2014. The phase-in of the initiative's components was more complete in 2015 than in the previous year.

Particularly in Missouri, ECCP interventions were associated with a consistent and significant reduction in all four outcomes, and this reduction was larger in 2015 than in 2014. The initiative was associated with a 5.9-percentage-point decrease in the probability of having any hospitalization in 2014 and a 9.3-percentage-point decrease in 2015 (Exhibit 2). Similarly, the initia-

tive was associated with a 5.5-percentage-point decrease in the probability of having any potentially avoidable hospitalization in 2014 and a 7.2-percentage-point decrease in 2015. The estimated ECCP effects indicate reductions in Medicare expenditures per resident of $729 in 2014 and $1,369 in 2015 for all-cause hospitalizations and of $456 in 2014 and $577 in 2015 for potentially avoidable hospitalizations (Exhibit 3).

Indiana followed a pattern similar to that of Missouri, with significant reductions related to the initiative in almost all outcomes in both years, and with the magnitude of the reduction larger in 2015 than in 2014. For example, ECCP interventions in Indiana were associated with a reduction of $236 in 2014 per resident in Medicare expenditures for potentially avoidable hospitalizations, and a reduction of $408 in 2015 (Exhibit 3).

The ECCP intervention in Pennsylvania was associated with a significant reduction in all four
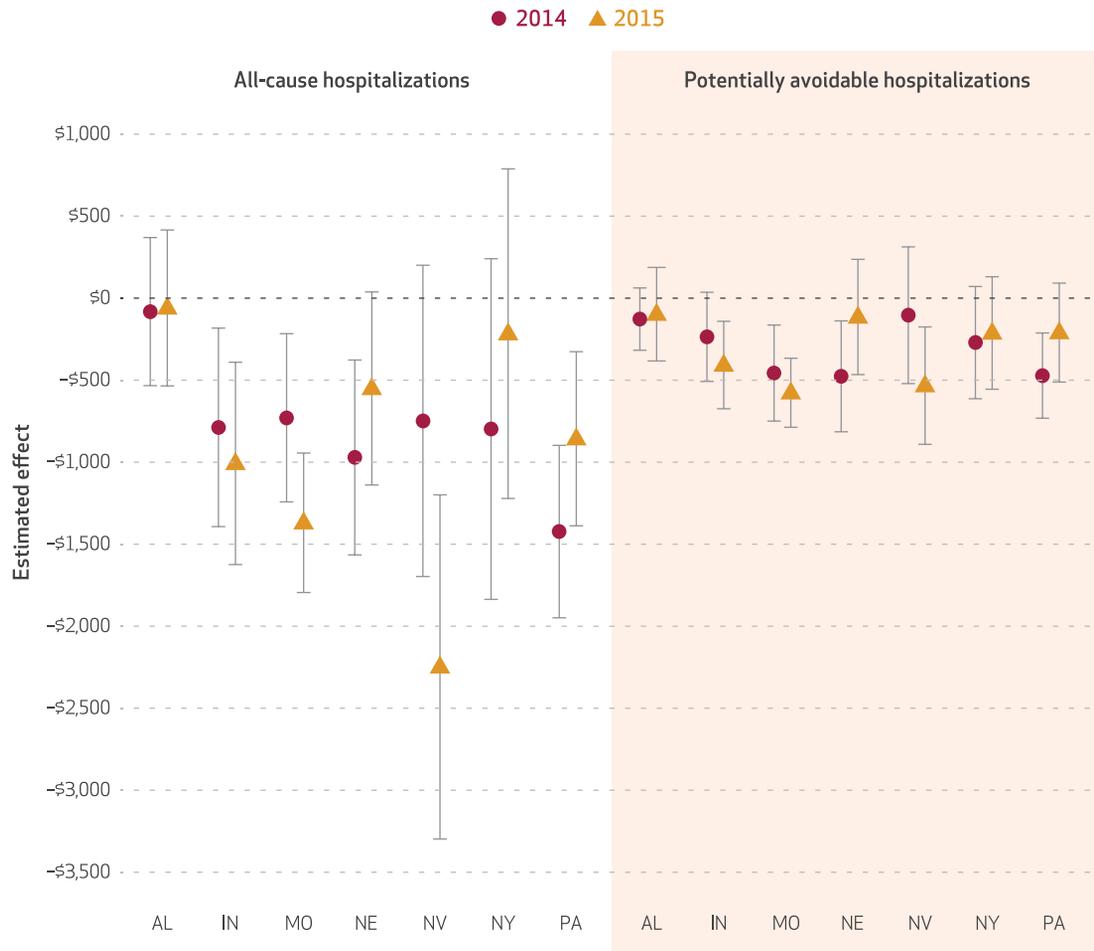
EXHIBIT 2

Estimated effects of ECCP interventions on the probability of any hospitalization among long-stay nursing facility residents
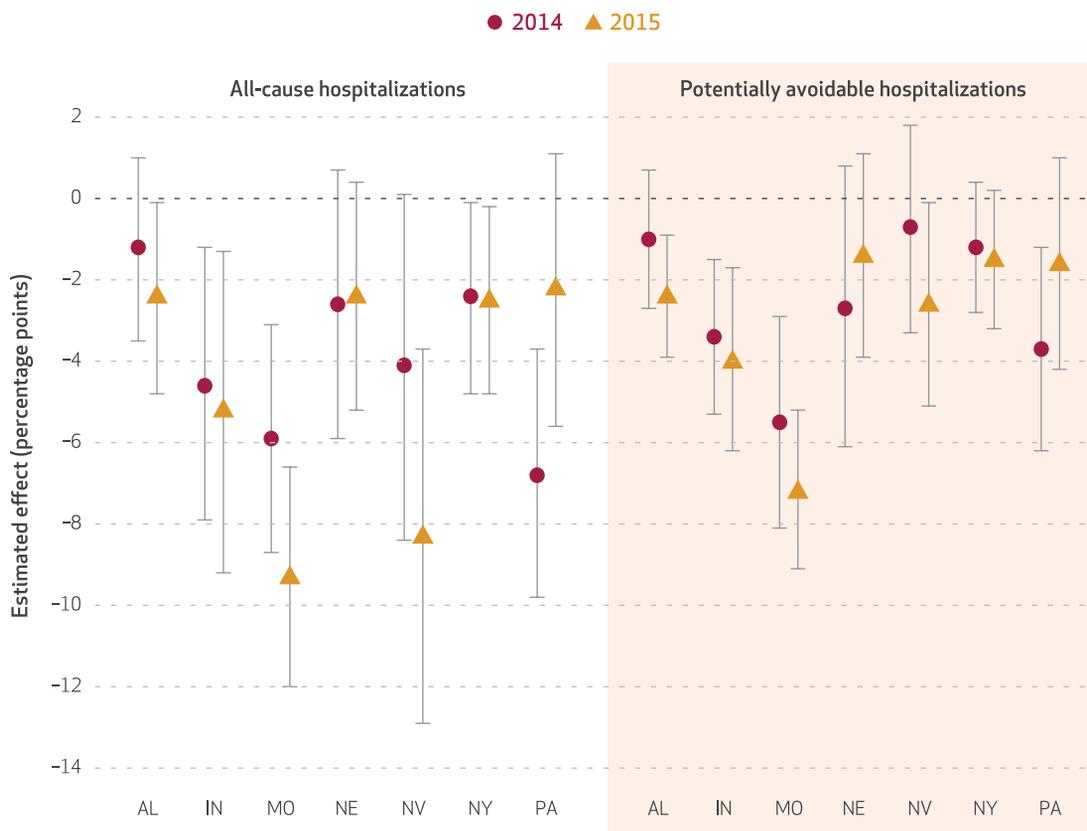
SOURCE Authors' analysis of Medicare claims data for the period 2011–15. **NOTES** The names of the seven Enhanced Care and Coordination Provider (ECCP) interventions, identified here by state, are in Exhibit 1. This exhibit shows difference-in-differences regression estimates of the intervention effects and associated 90% confidence intervals for 2014 and 2015. The effects are expressed in percentage-point differences in the probability of all-cause hospitalizations and potentially avoidable hospitalizations between the ECCP and comparison groups, net of the baseline difference between them in 2012.

EXHIBIT 3

Estimated effects of ECCP interventions on hospitalization-related Medicare expenditures per long-stay nursing facility resident

SOURCE Authors' analysis of Medicare claims data for the period 2011–15. NOTES The names of the seven Enhanced Care and Co-ordination Provider (ECCP) interventions, identified here by state, are in Exhibit 1. This exhibit shows difference-in-differences regression estimates of the intervention effects and associated 90% confidence intervals for 2014 and 2015. The effects are expressed in differences in nominal dollars per resident between the ECCP and comparison groups, net of the baseline difference between them in 2012, for all-cause hospitalizations and potentially avoidable hospitalizations.

outcomes in 2014. However, the effects on all outcomes were weakened in 2015 and remained significant for only one outcome, expenditures for all-cause hospitalizations (Exhibit 3).

Although the initiative did not have a significant effect on any outcome in Nevada (with its limited comparison group) in 2014, effect sizes increased and became significant for all outcomes in 2015. Moreover, relative to the other states, the effect size in 2015 was notably larger and more significant for all-cause hospitalizations than for potentially avoidable hospitalizations (Exhibit 2); the two corresponding expenditure outcomes showed a similar pattern (Exhibit 3).

In Alabama, where the ECCP used an education-only model for nurses, the estimated effects

in 2014 were small on all outcomes, and none of those estimates was significant. Nevertheless, there was modest improvement in the estimated effects on the two hospitalization outcomes in 2015, as indicated by a larger and significant reduction in both cases (Exhibit 2). No improvement was observed in the estimated effects on hospitalization-related expenditures, which remained small and not significant (Exhibit 3).

In New York, whose ECCP also used an education-only model for nurses, the estimated effects did not change meaningfully between 2014 and 2015 on any of the outcomes. In both years, the initiative was associated with a small significant reduction in the probability of all-cause hospitalizations (Exhibit 2). For all remaining outcomes the effect estimates pointed to a reduction, but

not a significant one.

In Nebraska, there was no meaningful change from 2014 to 2015 in the estimated effects of the ECCP intervention on the two hospitalization outcomes, neither of which was significant in either year. The estimated effects on both expenditure outcomes weakened and lost significance in 2015.

In addition to these state-specific effects, we looked more broadly at the initiative's aggregate effect on Medicare expenditures of all types in the seven ECCPs. We found an estimated total spending reduction, net of grants to the ECCPs, of about $11 million for 2015, but it was not significant.

QUALITATIVE FINDINGS We found that the implementation experience varied substantially across the seven states and across facilities within states. Model components frequently were modified or implemented at different speeds and on varying timelines. In some instances, components were introduced in a different order, depending on characteristics of individual participating facilities—such as their degree of engagement with the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents or staff turnover. Examples include a two-year delay in Pennsylvania for the implementation of telemedicine in rural facilities with wireless Internet connectivity problems, and the decision of chain facilities in Alabama to modify standard INTERACT tools. This observed variability and diversity of implementation experiences across participating facilities are important for understanding and interpreting our findings.

Despite implementation discrepancies, many facilities were committed to the initiative. As one nursing facility administrator said, "We have put all our trust, faith, and loyalty into this program." However, the level of support was not uniform, as each state included both facilities that enthusiastically adopted the initiative and facilities where it was not as well received.

Overall, consistent with Medicare claims analyses, models in which nurses provided only education had smaller and less consistent effects, compared to models in which nurses provided regular hands-on clinical care. The Missouri, Indiana, and Pennsylvania models—which included consistent, hands-on clinical care for nursing facility residents on a daily basis, not just training for facility staff or intermittent clinical care—demonstrated greater changes in facility culture, greater support for the need to reduce avoidable hospitalizations, and greater overall buy-in to the initiative from facility staff. Clinical care by ECCP nurse practitioners was valued by facility staff and appreciated by residents and their families. The benefit of having "an extra pair of eyes on a resident" was the most frequently used phrase when describing the initiative. However, scope-of-practice laws in some states—Missouri, for example—limit the ability of advanced practice nurses to provide the full scope of nursing home care for which they are licensed, such as writing medical orders.

Additionally, the findings show the importance of building relationships between ECCP nurses and staff in the facilities and between ECCP nurses and primary care providers. ECCP nurses reported devoting much time and energy to these relationships and working hard to be accepted by facility staff, especially in the early stages. For any large-scale effort that changes practice patterns, facilities acknowledged that they must obtain buy-in from leadership and staff at all levels and from corporate owners, residents, families, and other key stakeholders. ECCPs emphasized that this support must include not only general acceptance of the initiative's goals but also acceptance of specific interventions such as the adoption of INTERACT tools and providing ECCP nurses with access to the facility's electronic medical records. ECCPs that developed strong facility engagement, buy-in, and investment across facility staff and leadership were more successful in producing desirable outcomes than other ECCPs. However, factors such as staff turnover—a pervasive problem in nursing facilities in both administrative and patient care roles—and lack of support from individual physicians who were unwilling to include outside nurses on their care teams significantly undermined this buy-in.

Even with general staff support, ECCPs encountered difficulties in the adoption of specific interventions, particularly components related to information technology such as telemedicine or secure messaging systems, because of cumbersome technology and lack of appropriate infrastructure in many facilities.

Finally, facility leadership indicated that it takes a substantial amount of time to introduce, deploy, and maintain an initiative of this magnitude. The models required fundamental cultural change within nursing facilities and needed years to be fully implemented. Even near the end of this four-year initiative, many facilities were only beginning to acknowledge a shift in attitudes and changes in practice patterns.

Discussion

The evaluation results show promising evidence that the multipronged ECCP interventions to reduce potentially avoidable hospitalizations and related Medicare expenditures for long-stay res-

idents of nursing facilities are producing the desired outcomes. Overall, our analysis of the 2014 and 2015 data indicates consistently significant favorable effects of the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents in Missouri and Indiana, somewhat less consistently significant favorable effects in Pennsylvania and Nevada, and primarily nonsignificant positive effects in Alabama, New York, and Nebraska.

In Missouri, the measurable impact may be attributed to the ECCP's advanced practice RNs being well integrated, extensively used, and positively received at all facilities. In Indiana the ECCP's RNs provided similar clinical support, education, and training of facility staff and were seen as bringing a more interdisciplinary team approach to keeping residents out of the hospital.

In Pennsylvania, initiative effects weakened in 2015 relative to 2014, possibly because of significant efforts to reduce avoidable hospitalizations in comparison facilities (all these facilities reported being engaged in such efforts). In Nevada, relative to 2014, the estimated effects of the initiative became stronger and gained significance in 2015. However, results from Nevada should be interpreted with caution, because the comparison group had atypically worsening performance over the study period, particularly for all-cause hospitalizations.

Alabama showed somewhat stronger effects of the ECCP intervention on reducing all-cause and potentially avoidable hospitalizations (though not on related Medicare expenditures) in 2015 than in 2014, possibly resulting from increased focus on gaining support for the initiative from facility and corporate leadership. In New York there was little change between 2014 and 2015 in the estimated effects of the initiative on the outcomes we analyzed. In Nebraska the estimated effects of the initiative became even smaller in 2015 than they were in 2014, which indicates a weak impact of ECCP interventions relative to other states.

Increasing the presence of advanced practice RNs in nursing facilities has been shown to have a positive effect on reducing hospitalizations among facility residents.[13] Previous studies have shown that these skilled staff members are able to provide preventive care in the facility and treat emerging concerns promptly, instead of relying on emergency services for care of advanced or worsening conditions.[13] The relationship between having more skilled staff in nursing facilities and reducing hospitalizations has also been shown to have financial benefits, as these staff members are able to prevent costly unnecessary hospitalizations at a lower salary expense, compared to physician staff members.[13]

Our qualitative data analysis indicated that the unevenness in results has multiple contributing factors, such as the specific components of the model, major variability in the speed of and experience with implementation, and structural differences within and across ECCPs and facilities.

Conclusion

The results from this timely evaluation of CMS's Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents will help policy makers understand the effectiveness, practicality, and challenges of implementing large-scale clinical and educational interventions aimed at reducing potentially avoidable hospitalizations of long-stay residents of nursing facilities. The majority of these residents are frail older adults who are susceptible to many of the adverse health consequences of unnecessary hospitalizations. Reducing such hospitalizations not only helps improve the quality of care and quality of life for nursing facility residents but also helps lower costs for Medicare and Medicaid.

Unlike some other CMS efforts to reduce avoidable hospitalizations—such as the Nursing Home Value-Based Purchasing Demonstration,[14] the Financial Alignment Initiative,[15] and the Hospital Readmissions Reduction Program[16]—this initiative did not provide financial incentives to providers in the years covered by this evaluation, only education and assistance. However, in the initiative's next phase, Medicare will pay participating nursing facilities and their partnering practitioners for treating residents with particular conditions in the facility instead of sending them to the hospital.[17] We will evaluate the effectiveness of this new payment model as it unfolds, relative to that of the model of clinical and educational interventions. ∎

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