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Original Research Article

Investigating the Avoidability of Hospitalizations of Long Stay Nursing Home Residents: Opportunities for Improvement

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Abstract

Background and Objectives: To examine the relationship between hospital diagnoses associated with hospital transfers of long stay nursing home residents, ratings of avoidability of transfer, and RN-identified quality improvement opportunities.
Research Design and Methods: Prospective clinical demonstration project, named OPTIMISTIC, with trained RNs embedded in nursing homes that performed root cause analyses for 1,931 transfers to the hospital between November 2014 and July 2016. OPTIMISTIC RNs also rated whether transfers were avoidable, identified quality improvement opportunities, and recorded hospital diagnoses. Resident characteristics were obtained from Minimum Data Set assessments. Relationships between six hospital diagnoses commonly considered "potentially avoidable" and OPTIMISTIC RN root cause analysis findings were examined. Facilities were participating in the OPTIMISTIC demonstration project designed to reduce hospital transfers during the study period.
Results: Twenty-five percent of acute transfers associated with six common diagnoses were considered definitely or probably avoidable by project RNs versus 22% of transfers associated with other diagnoses. The most common quality improvement opportunity identified for transfers rated as avoidable was that the condition could have been managed safely if appropriate resources were available, a factor cited in 45% of transfers associated with any of the six diagnoses. Problems with communication among stakeholders were the most commonly noted area for improvement (48%) for transfers associated with other diagnoses. Many other areas for quality improvement were noted, including earlier detection of change in status and the need for understanding patient preferences or a palliative care plan.
Discussion and Implications: Although some nursing home transfers may later be deemed potentially avoidable based on post-transfer hospital diagnosis from Medicare claims data, OPTIMISTIC nurses caring for these residents at time of transfer categorized the majority of these transfers as unavoidable irrespective of the hospital diagnosis. Multiple quality improvement opportunities were identified associated with these hospital transfers, whether the transfer was considered potentially avoidable or unavoidable.

Translational Significance: Transfer events of nursing home residents are often considered potentially avoidable, although this judgment is often rendered based on analysis of diagnoses made in the hospital. Nurses involved in the care of nursing home residents at the time of transfer are able to identify opportunities for quality improvement. Identified strategies for reducing hospital transfers of nursing home residents include improving communication during an acute change in status event, recognition of available resources to treat residents in-house, access to clinicians and rapid diagnostic testing, and timely access to advance care planning and palliative care.

Keywords: Palliative care, Quality of care, Relocation and transition

Background and Objectives

Many emergency department visits and hospitalizations of nursing home residents are considered "potentially avoidable," (Ouslander et al., 2010; Walsh, 2011). Potentially avoidable hospitalizations are burdensome to residents and costly to Medicare (Department Health and Human Services [DHHS], 2013). As a result, the issue of potentially avoidable emergency department visits and hospitalizations of nursing home residents have the attention of policymakers and researchers (Department of Health and Human Services [DHHS], 2013; Ouslander & Berenson, 2011). A variety of factors have been identified as contributors to avoidable hospitalizations of nursing home residents. These include communication breakdowns between staff, residents and families and providers; flawed care processes; lack of resources including equipment, skilled staff, or onsite providers; and failure to determine resident goals of care (Gillespie, Gleason, Karuza, & Shah, 2010; Walsh, 2011).

Much of the research on potentially avoidable hospitalizations utilizes administrative Medicare claims data to define and identify potential avoidability based on the diagnoses associated with the hospitalization (Ouslander & Maslow, 2012; Segal, Rollins, Hodges, & Roozeboom, 2014; Spector, Limcangco, Williams, Rhodes, & Hurd, 2013; Walsh et al., 2012; Wysocki et al., 2014). Diagnoses commonly associated with potentially avoidable hospitalizations of nursing home residents include pneumonia, urinary tract infection, dehydration, pressure ulcers, cellulitis, heart failure (HF), and chronic obstructive pulmonary disease/asthma (Centers for Medicare and Medicaid Services [CMS], 2014; Segal et al., 2014; Walsh, 2011). These diagnoses were derived from a study by Walsh and colleagues (Walsh et al., 2012). They used an expert panel to select candidate diagnoses among nursing home residents that were potentially preventable or could reasonably be managed in a nursing facility without a hospitalization. They arrived at five of the most prevalent potentially avoidable hospitalization conditions (pneumonia, congestive heart failure, urinary tract infection, dehydration, and chronic obstructive pulmonary disease or asthma) that were consistent with prior studies of ambulatory care sensitive conditions and potentially preventable hospitalizations (Agency for Healthcare Research and Quality [AHRQ], 2018; Bindman, et al, 1995; Billings et al. 1993), and which they determined would be amenable to "quality improvement interventions and educational initiatives to improve the recognition, evaluation, and early management of these conditions." These five potentially avoidable hospitalization diagnoses, with the addition of infected pressure ulcers/cellulitis, are also the focus of the second phase of Centers for Medicare and Medicaid Services (CMS) demonstration project (CMS, 2014) designed to test new billing codes and their effect on hospitalizations, of which the OPTIMISTIC project is one site.

The OPTIMISTIC demonstration project is a multicomponent clinical intervention delivered by OPTIMISTIC RNs and OPTIMISTIC nurse practitioners (NPs) collaborating with nursing home staff (OPTIMISTIC). One component of the intervention is implementation of the Interventions to Reduce Acute Care Transfers (INTERACT) tools including a root cause analysis of transfer events (Ouslander et al., 2011). INTERACT, includes a publically available suite of tools which were developed and tested by researchers at Florida Atlantic University and supported through funding from multiple sources including the National Institutes of Health and Centers for Medicare and Medicaid Services. The researchers sought to improve the identification, evaluation and management of acute changes in condition experienced by nursing home residents (Ouslander, 2012). Early research on the INTERACT tools supported "substantial reductions" in hospitalizations when INTERACT is effectively implemented; a randomized controlled trial, however, did not demonstration a significant impact on hospitalizations using the INTERACT intervention (Kane et al., 2017). The INTERACT findings supported "substantial reductions" in hospitalizations when INTERACT is effectively implemented. The INTERACT Quality Improvement tool for Review of Acute Care Transfers (Pathway Health, 2018) was reviewed and modified by the OPTIMISTIC project team. Modification of the quality improvement tool included additional required data elements from the funder, project specific questions to assess avoidability based on clinical judgment, and reduction of hospital diagnoses into diagnostic categories.

The standardized root cause analyses using the modified INTERACT Quality Improvement Tool for Review of Acute Care Transfers form were conducted by OPTIMISTIC RNs for all transfers of residents enrolled in the program. In the OPTIMISTIC project, the root cause analysis form is called the Transfer Tracking and Quality Improvement tool. The OPTIMISTIC RNs were embedded in the nursing facility and participating in daily resident briefings to identify all resident transfer events that occurred. Due to the aims of the program, the OPTIMISTIC RNs are specifically assigned to review and evaluate all transfer events to document the situation and evaluate for avoidability and quality improvement opportunities. For many of these encounters, the OPTIMISTIC RNs are present at the time of the transfer as they are embedded at the facility; facility medical records and data collected from staff present at the event are also used to complete the transfer tracking and quality improvement form. Once a transfer has occurred, the OPTIMISTIC RNs completed the Transfer Tracking and Quality Improvement tool and include details of the transfer event, a rating of avoidability of the transfer based on clinical judgment, and identification of opportunities for quality improvement. The data collected from the transfer review is entered into the project database and facility specific information is reported back to the facility for quality improvement activities. Root cause analysis can provide insight into factors associated with transfers that project nurses rated as potentially avoidable (Ouslander et al., 2016b). The OPTIMISTIC RNs are uniquely positioned to review transfers and assess avoidability based on the event-specific circumstances because they are working alongside the nursing home staff but are not facility employees and are able to make objective assessments of avoidability. The OPTIMISTIC RNs have been extensively trained, including bi-weekly, on-going education sessions, with topics including project-specific protocols, geriatrics, palliative care, and care for specific common medical conditions. The OPTIMISTIC RNs are asked, after reviewing the event-specific circumstances, to assess the avoidability of the transfer as, "definitely unavoidable, probably unavoidable, probably avoidable, definitely avoidable," from a dropdown list of options. They are asked to determine whether the transfer would have been avoidable if ideal nursing home resources were available.

The data collected within the OPTIMISTIC demonstration project creates a unique opportunity to examine the details of large numbers of transfer events of nursing home residents, obtained in real-time by trained clinical study personnel. The objectives of the current analyses are to assess the relationship between six potentially avoidable hospitalization diagnoses and (1) RN ratings of avoidability; and (2) RN-identified quality improvement (QI) opportunities during the transfer events of long stay nursing home residents in the context of a multicomponent intervention to reduce hospital transfers.

Research Design and Methods

The OPTIMISTIC demonstration project is approved by the Indiana University Institutional Review Board.

Setting

Data collection occurred between November 2014 and July 2016 in 19 OPTIMISTIC nursing homes participating in the OPTIMISTIC project. A project nurse (RN) is assigned to each nursing home to implement the OPTIMISTIC clinical model, supported by project NPs who cover multiple facilities (OPTIMISTIC, 2018). The project RN was embedded full-time (Monday through Friday, 8 a.m.–5 p.m.) in the facility to respond to acute changes in condition of residents, facilitate advance care planning with residents and families, and support the nursing staff of the facility through education and mentoring. The project NPs provided clinical support through acute resident visits and transition care visits. The OPTIMISTIC project RNs and NPs are responsible for documenting clinical encounters and root cause analyses of transfer events in a database for monitoring and evaluation of the intervention.

Sample

The sample consisted of 1,174 long stay nursing home residents enrolled in the OPTIMISTIC project between November 2014 and July 2016 who experienced at least one transfer. There were a total of 2,226 acute transfers (unit of analysis) from nursing homes to emergency departments or hospitals during that same time period. Several cases were excluded from analysis including 95 transfers to another setting (e.g., another nursing home), an additional 54 for which the hospital discharge status was unknown, and another 146 transfers that originated outside of the nursing home (e.g., dialysis unit, specialist clinic appointment) or had an unknown origin. Thus, the final analytic sample was comprised of data related to 1,931 transfers involving 1,158 residents.

Resident eligibility was determined per CMS guidelines for the initiative to reduce avoidable hospitalizations (CMS, 2014). Residents were eligible for OPTIMISTIC if they had been in the facility greater than 100 days or indicated on the Minimum Data Set that they had no plan for discharge. Enrollment was passive; residents or their surrogate decision makers were provided with letters describing the project and the opportunity to opt-out of it at the beginning of the project or as they became eligible over the course of the project. To opt-out, residents or their surrogates signed the opt-out form provided with the letter. Less than 1% of all eligible residents chose to opt out over the course of the project.

Procedures and Data Collection Tools

OPTIMISTIC RNs used an adapted version of the INTERACT root cause analysis tool (Ouslander et al.,

2011; Pathway Health, 2018) to perform a root cause analysis whenever an OPTIMISTIC resident transferred, as close to the time of acute transfer as possible. The project RN embedded in the facility was responsible for completing the root cause analysis tool. The analysis was performed for as many transfers as possible, including transfers that occurred when the OPTIMISTIC RN was not present in the nursing facility. Once a transfer has occurred, the OPTIMISTIC RNs completed the Transfer Tracking and Quality Improvement tool and include details of the transfer event, a rating of avoidability of the transfer based on clinical judgment, and identification of opportunities for quality improvement. The data collected from the transfer review is entered into the project database and facility specific information is reported back to the facility for quality improvement activities. OPTIMISTIC RNs were trained to use clinical judgment in assessing avoidability. They were instructed to consider: "If conditions were ideal (appropriate nursing care, resources, and communication) would this transfer have happened?" These instructions were provided during training and in a manual that they have available for reference. Project RNs received approximately six hours of training on use of the root cause analysis tool, including principles of root cause analysis and discussion of case examples. They use their clinical judgment and knowledge of the transfer event to answer the avoidability question as objectively as possible for the purposes of quality improvement.

Data collected included a description of signs and symptoms at the time of transfer and a rating of avoidability based on his or her clinical judgment. Project RNs are also asked on the root cause analysis tool, independent of the avoidability rating, to identify any areas of quality improvement relevant to the transfer from a drop-down list. Categories included: (1) new sign, symptom, or other change might have been detected earlier; (2) changes in the resident's condition might have been communicated better; (3) condition might have been managed safely in the facility with available resources; (4) nursing home resources were not available at the time of transfer; (5) resident and family preferences for hospitalization might have been discussed earlier; (6) advance directives and/or palliative or hospice care might have been put in place earlier; and (7) other. There are further category breakdowns that can be selected if the OPTIMISTIC RN identifies that nursing home resources were unavailable at the time of transfer, including access to primary care providers, pharmacy services, staff (number of staff, improved training for staff, RN coverage, respiratory therapy), timely labs (such as urine/blood, electrocardiogram, x-ray or ultrasound), or specialty medical care. The project RNs may identify multiple areas of quality improvement related to a transfer event, as, for example, both breakdowns in communication and delays in identification of an acute change could occur in a given situation. The project RNs are well-placed to identify these opportunities as they are embedded in the nursing home and are either present for the transfer or have access to the staff involved and medical records.

Upon transfer back, project RNs and NPs collected data related to the emergency department visit or hospitalization, including hospital discharge diagnoses using structured forms. Follow-up data on hospital diagnoses were available only for those returning to the facility. Diagnoses were obtained from hospital discharge paperwork. Resident characteristics were obtained from the Minimum Data Set 3.0 quarterly and annual assessments. Characteristics obtained from the Minimum Data Set included age, gender, measurement of functional status called the Activities of Daily Living, and a calculation of cognitive performance (Thomas, Dosa, Wysocki, & Mor, 2015). Minimum Data Set assessments were obtained for all residents participating in the OPTIMISTIC study.

Data Analysis

For purposes of this analysis, all diagnoses (primary, secondary, or other) were included and collapsed into 15 categories. Residents who died in the hospital were analyzed separately, as discharge diagnoses were not available. If any of the six potentially avoidable hospitalization diagnoses (pneumonia, dehydration, heart failure, urinary tract infection, pressure ulcers/cellulitis, or chronic obstructive pulmonary disease/asthma) appeared in the data collection, the transfer was assigned to that potentially avoidable hospitalization diagnosis. Diagnosis categories were cross tabulated with measures of transfer avoidability and quality improvement opportunities. Cross-tabulations and difference of proportions tests were performed to determine if there were statistically significant relationships between potentially avoidable diagnoses and OPTIMISTIC RN ratings of avoidability (definitely avoidable or probably avoidable compared with probably unavoidable or definitely unavoidable) and OPTIMISTIC RN identification of quality improvement opportunities related to the transfer. For the difference of proportions test, we determined if the proportion of avoidable transfers in each diagnostic category was significantly different from the overall proportion of avoidable transfers in the sample. Similarly, we tested the differences in proportions of quality improvement opportunities for potentially avoidable hospitalizations and nonpotentially avoidable hospitalizations.

Results

In this sample of long stay nursing home residents, approximately a third (34%) of residents who experienced hospital transfers were aged 85 years or older. Most residents were moderately or totally dependent in activities of daily living and nearly half had moderate to severe cognitive impairment. Although most residents who experienced a hospital transfer (64%) had only one transfer during the period of the study, 22% had two transfers, 7% had three transfers,

and 7% had four or more transfers. Forty-four percent of the 1,931 acute transfers included one of the six potentially avoidable hospitalization diagnoses: urinary tract infection (18%), pneumonia (13%), heart failure (12%), chronic obstructive pulmonary disease/asthma (11%), pressure ulcers/cellulitis (5%), or dehydration (3%) (Table 1).

Table 2 shows OPTIMISTIC RN ratings of avoidability related to the six potentially avoidable hospitalization diagnoses; 25% of acute transfers associated with potentially avoidable hospitalization diagnoses (nonsignificant) were considered avoidable. In the subanalysis which included only primary diagnoses, results are largely similar, however, a somewhat higher (29%) of acute transfers associated with potentially avoidable hospitalization diagnoses were considered either definitely or probably avoidable which does reach statistical significance ($p < .05$). Among all diagnoses, a significantly higher proportion of urinary tract infection related transfers (30%) were rated as definitely or probably avoidable compared to the proportion for all transfers (23%) ($p < .05$). A somewhat higher proportion of urinary tract infection related transfers (35%) was rated avoidable among all of the primary diagnoses. As would be expected, transfers resulting in deaths in the hospital were rated significantly less avoidable.

When considering all transfers, regardless of avoidability, the most common quality improvement opportunities were associated with lack of nursing home resources: resources not available at the time of transfer (27%) or

Table 1. Characteristics of Residents and Transfers

	Characteristics of transferred patients (N = 1,174)	N	% of patients
Age	<65	190	16
	65–74	206	18
	75–84	353	30
	85 or older	425	36
Gender	Female	732	62
Extensive or Total Dependence in	Bed Mobility	1,019	87
Activities of Daily Living (ADLs)	Transferring	996	85
	Toileting	1,044	89
	Eating	667	57
Cognitive Functional Status (CFS scale)	Intact	353	31
	Mildly Impaired	290	25
	Moderately Impaired	442	39
	Severely Impaired	59	5
	Characteristics of transfers (N = 1,931)		% of transfers[a]
Number of Transfers per Patient	One	749	64
	Two	263	22
	Three	82	7
	Four or more	81	7
Transfer Destination	Emergency department (ED) only	648	34
	Admitted[b]	1,241	66
Discharge Status	Transfer back to nursing facility[c]	1,785	92
	Death in hospital	146	8
Length of Stay in Facility at	Fewer than 100 days	360	19
Time of Transfer	100–365 days	595	31
	Greater than 365 days	976	50
PAH Diagnoses	None of the PAH diagnoses	1,058	55
	Any PAH diagnosis	873	45
	Individual PAH Diagnoses		
	UTI	344	18
	Pneumonia	267	14
	Heart failure	245	12
	COPD/asthma	219	11
	Pressure ulcers/cellulitis	106	5
	Dehydration	60	3

Note: COPD = Chronic obstructive pulmonary disease; PAH = Potentially avoidable hospitalization; UTI = Urinary tract infection.
[a]Transfers can have multiple diagnoses, percentages do not sum to 100%. [b]Admitted refers to both inpatient hospitalization or observation stays. [c]1,785 events when residents transferred back + 146 residents died in hospital for a total of 1,931 total transfers.

Table 2. Percentage Nurse Ratings of Avoidable Transfers by Diagnoses

	Any of the six PAH diagnoses	None of the six PAH diagnoses	Pressure ulcers	Heart failure	COPD	Dehydration	Pneumonia	UTI	Died in hospital	Overall
All Diagnoses Codes										
Definitely or Probably Not Avoidable, %	75	78	69	79	76	74	76	70	85	77
Definitely or Probably Avoidable, %	25	22	31	21	24	26	24	30*	15*	23
Total N	896	988	103	243	218	89	266	380	145	1,884
Primary Diagnoses Codes Only										
Definitely or Probably Not Avoidable, %	71	79	63	76	85	60	78	65	85	77
Definitely or Probably Avoidable, %	29*	21	37	24	15	40	22	35*	15*	23
Total *N*	469	1,415	38	42	33	25	149	196	145	1,884

Note: COPD = Chronic obstructive pulmonary disease; PAH = Potentially avoidable hospitalization; UTI = Urinary tract infection.
*Significantly different from the overall percentage at the 5% level using a one sample proportions test. Column percentages are given: e.g., Of people who are diagnosed as heart failure, 21% of transfers are definitely or probably not avoidable (*N* = 1,884 transfers back, 47 missing, 146 died in the hospital).

Table 3. Percentage of Avoidable Transfers With a Quality Improvement Opportunity by Potentially Avoidable Hospitalization (PAH) Diagnosis (*N* = 441 transfers rated avoidable)

	All diagnoses codes		Primary diagnosis code		Avoidable	All transfers
	Any PAH	No PAH	Any PAH	NO PAH	Total	Total
The condition might have been managed safely in the facility with available resources	45%*	35%	45%	38%	40%	15%
Changes in the resident's condition might have been communicated better among nursing home staff, with Medical Director/ Nurse Practitioner/ Physician Assistant, or with emergency department staff	43%	48%	39%	48%*	45%	16%
The new sign, symptom, or other change might have been detected earlier	32%	31%	28%	34%	32%	13%
Nursing home resources were not available at the time of transfer	20%	24%	22%	22%	22%	27%
Resident and family preferences for hospitalization might have been discussed earlier	15%	10%	15%	12%	13%	6%
Advance directives and/or palliative or hospice care might have been put in place earlier	15%	10%	12%	13%	12%	9%
N	225	216	138	303	441	1,931

Note: NP = Nurse practitioner; PAH = Potentially avoidable hospitalization.
*Indicating a significant difference tested using a two sample proportions test between any PAH and no PAH, *p*-value < .05.

that the condition might have been managed safely with available resources (15%) (Table 3). Communication issues were noted in about 16% of all transfers, followed by earlier detection of a change in condition, sign, or symptom (13%), earlier palliative care services (9%); and the need for earlier discussion of preferences for care (6%).

Among transfers that OPTIMISTIC RNs rated as avoidable, there were significant differences in the types of quality improvement opportunities identified between transfers associated with one of the six potentially avoidable hospitalization diagnoses and those associated with other diagnoses (Table 3). When considering all diagnoses, transfers

with a potentially avoidable hospital diagnosis had a significantly ($p < .05$) higher percentage of quality improvement opportunities identified in the category of managing the condition safely in the facility with available resources (45% vs 35%). When considering only the primary hospital diagnoses, transfers not associated with potentially avoidable hospitalization diagnoses were more likely to have quality improvement opportunities related to communication about resident change in status (48% vs 39%, $p < .05$).

When OPTIMISTIC RNs identified that nursing home resources were unavailable at the time of transfer, the most frequently cited categories were access to primary care physicians and access to timely lab testing. In nearly a third of transfers an opportunity to improve in early detection of a change in status was also noted. Discussion of resident preferences (15%) or identification of advance directives and/or lack of hospice or palliative care (15%) were also noted as areas for quality improvement in transfers both rated as avoidable by the OPTIMISTIC RN and associated with one of the six diagnoses.

Discussion and Implications

In this large sample of transfer events of long stay residents from nursing homes participating in a project to reduce hospital transfers, 44% of transfers were associated with six diagnoses commonly associated with potentially avoidable transfers. Consistent with previous research (Lamb, Tappen, Diaz, Herndon, & Ouslander, 2011; Ouslander et al., 2016a, Ouslander et al., 2016b; Vasilevskis et al., 2017), root cause analyses of nursing home to hospital transfers yields lower ratings of potential avoidability compared to studies relying on hospital diagnoses pulled from administrative data. Nurses judged that only 25% of acute transfers of long stay residents enrolled in OPTIMISTIC were avoidable. There were some differences in avoidability by diagnoses but these differences were not large. Multiple opportunities for quality improvement were associated with these hospital transfers. There were some differences in the types of quality improvement opportunities identified for transfers that were associated with potentially avoidable diagnoses versus transfers associated with other diagnoses. It is notable that when using all diagnosis codes, we did not find a statistically significant difference between avoidability ratings of transfers associated with potentially avoidable hospitalization diagnoses compared to other transfers when using all diagnostic codes; when restricted to only the primary diagnoses associated with the hospitalization, there were statistically significant differences but absolute differences were small. Given the focus on certain diagnoses that are associated with potentially avoidable hospital transfers, we would have expected more transfers associated with these six diagnoses to be rated as avoidable by RNs performing root cause analyses. These analyses present opportunities for further discussion, providing focus on resources and processes that must be addressed to continue to move the needle in reducing hospital transfers, even in the context of nursing homes who are actively engaged in attempting to reduce avoidable transfers.

These analyses provide focus on resources and processes that must be addressed to continue to move the needle in reducing hospital transfers. Specifically, these results highlight opportunities around assessing whether acute conditions can be managed safely in-house, availability of nursing home resources, strategies to improve communication, and access to advance care planning and palliative care. Further, this study provides additional insight into the use of claims-based potentially avoidable hospital categorizations and how the underlying causes of these transfers may differ from transfers for other diagnoses. Our findings support other researchers' work that hospitalizations associated with a list of potentially avoidable hospital diagnoses may be prevented by excellent communication and appropriate resource availability in a nursing home setting. For diagnoses that did not fall into that category, i.e., diagnoses not generally associated with potentially avoidable hospital transfers, OPTIMISTIC RNs still identified areas of quality improvement including primary care provider presence and access to timely diagnostic testing.

There were some differences in types of quality improvement opportunities that project RNs identified in transfers associated with six common potentially avoidable hospitalization-associated diagnoses compared with transfers associated with other diagnoses. The rationale for considering these six diagnoses as tied to potentially avoidable hospital transfers stems from the principle that these residents should be able to be treated in place with available nursing home resources (CMS, 2014; Harrison et al., 2014; Mkanta, Chumbler, Yang, Saigal, & Abdollahi, 2016; Rosano et al., 2013; Walsh, 2011). The OPTIMISTIC RNs evaluating these transfers appear to affirm this categorization, identifying communication problems and failure to manage in place despite available resources as the most common opportunities for improvement. The OPTIMISTIC intervention includes emphasis on structured communication tools, such as use of the SBAR (Situation-Background-Assessment-Recommendation) form from INTERACT (Pathway Health, 2018) to enhance communication with doctors and bedside mentoring to improve clinical assessment skills of nursing staff. Strong assessments and clear communication of findings to resident primary care providers and families may increase the confidence of all stakeholders to initiate treatment of ill residents in place. These six conditions, which include exacerbations of chronic disease and common infections, can further be targeted through structured care pathways.

In contrast, transfers rated as avoidable by the OPTIMISTIC RNs that were associated with other diagnoses had different opportunities for improvement identified. Notably, OPTIMISTIC RNs indicated that nursing home resources were not available at the time of transfer over

80% of the time when opportunities for improvement were described for these avoidable transfers. The most commonly identified unavailable resource was access to the primary care clinician and timely lab testing. To impact transfers associated with other conditions, diagnoses not usually considered associated with potentially avoidable hospitalizations, increased clinician presence, and access to rapid diagnostic testing may be the key to determine whether some of these residents can be safely cared for in place.

Moreover, quality improvement opportunities related to lack of advance directives or palliative care were identified in about one quarter of all transfers project RNs rated as avoidable. The OPTIMISTIC RNs are extensively trained in advance care planning, thus nursing homes participating in this project have more access than most nursing homes to this expertise. Thus, it is notable that even in these facilities, there is room for improvement that may continue to impact hospital transfers. Claims-based potentially avoidable hospitalization categories are being used for quality assessments and linked to payment incentives. There is limited evidence, however, of the validity of these diagnostic categories in determining the true avoidability of a hospital transfer. This study used root cause analyses by trained project RNs to determine if transfers of long stay nursing home residents with potentially avoidable hospital diagnoses were any more avoidable than hospitalizations associated with other diagnoses. Our findings raise questions about the strength of claims-based categories in identifying truly avoidable events.

There are some limitations to these analyses. Although all OPTIMISTIC RNs received standardized training in root cause analyses, clinical judgment may vary and interrater reliability was not assessed. The role of the OPTIMISTIC RN is to support the facility in reduction of hospital transfers and thus they are attune to opportunities for quality improvement related to transfers. Facilities were participating in a multicomponent quality improvement initiative to reduce hospital transfers and thus may have lower rates and do have more resources than other facilities, which may limit generalizability. Medicare claims data was not available and thus OPTIMISTIC RN and NP identified hospital discharge diagnoses may not be a complete overlap with the ICD-10 codes billed for hospital care.

Conclusion

Nursing home to hospital transfers are complex. OPTIMISTIC and other resource intensive, multicomponent interventions to reduce these transfers have demonstrated promising results (Ingber et al., 2017). Researchers and providers continue to seek feasible and focused approaches to provide better care in place to nursing home residents, avoiding burdensome or unnecessary hospital transfers. In order to continue to refine and test models of care, a more sophisticated understanding is needed of nursing home to hospital transfers and why many may be avoidable. These findings provide more detail on transfer events, including embedded, specially trained RN ratings of avoidability and identification of quality improvement opportunities including the need for increased resources in the facility and improved communication. Interventions to reduce avoidable hospital transfers should recognize the many drivers of this phenomenon and, when possible, incorporate strategies for improving communication among all stakeholders during an acute change in status event, recognition of available resources to treat residents in-house, access to clinicians and rapid diagnostic testing, and timely access to advance care planning and palliative care. Given the continued relevance of these issues, there is a need for larger scale studies to validate and compare strategies of determining avoidability.

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Conflict of Interest

None reported.

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