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Defining Safety in the Nursing Home Setting: Implications for Future Research



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A B S T R A C T

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Currently, the Agency for Healthcare Research and Quality (AHRQ) Common Format for nursing homes (NHs) accommodates voluntary reporting for 4 adverse events: falls with injury, pressure ulcers, medication errors, and infections. In 2015, AHRQ funded a technical brief to describe the state of the science related to safety in the NH setting to inform a research agenda. Thirty-six recent systematic reviews evaluated NH safety-related interventions to address these 4 adverse events and reported mostly mixed evidence about effective approaches to ameliorate them. Furthermore, these 4 events are likely inadequate to capture safety issues that are unique to the NH setting and encompass other domains related to residents' quality of care and quality of life. Future research needs include expanding our definition of safety in the NH setting, which differs considerably from that of hospitals, to include contributing factors to adverse events as well as more resident-centered care measures. Second, future research should reflect more rigorous implementation science to include objective measures of care processes related to adverse events, intervention fidelity, and staffing resources for intervention implementation to inform broader uptake of efficacious interventions. Weaknesses in implementation contribute to the current inconclusive and mixed evidence base as well as remaining questions about what outcomes are even achievable in the NH setting, given the complexity of most resident populations. Also related to implementation, future research should determine the effects of specific staffing models on care processes related to safety outcomes. Last, future efforts should explore the potential for safety issues in other care settings for older adults, most notably dementia care within assisted living.

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As in other health care settings, adverse events and resident safety issues may occur frequently in nursing homes (NHs). In 2014,

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nationwide state surveys identified an average of 7.96 deficiencies in care per NH facility. Most commonly these were failures in infection control, environmental safety, food sanitation, quality of care, and unnecessary medication use. Although deficiencies do not necessarily represent safety lapses or adverse events, the average number of deficiencies per facility suggests the potential for harm to occur. Indeed, more than 20% of facilities had a deficiency denoted as actual harm or jeopardy. An estimated mean of 1.5 falls per NH bed per year occur in long-term care facilities, with 4% resulting in fracture and 11% in serious injuries such as lacerations and head trauma.^{1,2} Specific to short-stay skilled nursing facility (SNF) residents, 1 in 5 older adults admitted to an SNF after hospitalization experiences adverse events, and as many as 60% of these events may be preventable.³ As noted in

the 2014 Office of the Inspector General report, *Adverse Events in Skilled Nursing Facilities: National Incidence Among Medicare Beneficiaries*, of the 10% of residents harmed by adverse events, half were readmitted to the hospital for treatment, resulting in \$2.8 billion in Medicare spending.³

More than 90% of NHs nationwide have dually certified Medicare and Medicaid beds.⁴ Thus, the overwhelming majority of facilities provide care for both short-stay, who typically receive skilled nursing care, and long-stay residents. Although residents who receive skilled nursing care are much more likely to return home after rehabilitation, they are also susceptible to adverse events and other safety issues. One recent study reported that 33% of short-stay residents discharged home suffered an adverse medication-related event within 45 days of SNF discharge, and only 28% of this group remained living at home 90 days after SNF discharge.^{5,6} In addition, 10% experienced a hospital readmission within 30 days of SNF discharge.⁷ Based on these findings, new quality indicators are currently being developed by the Centers for Medicare and Medicaid Services (CMS) and others for short-stay residents discharged home related to hospital readmission rates, with the rationale that this measure reflects the quality of the SNF discharge process. Other new CMS quality indicators will measure rates of readmission to the hospital or emergency room from an SNF within 30 days due to evidence that many of these health care utilization events may be preventable.

Based in part on these reports and recent CMS policy initiatives, which suggest that important safety issues need to be addressed in both short- and long-stay NH care environments, the Agency for Healthcare Research and Quality (AHRQ) commissioned the Vanderbilt University Evidence-based Practice Center in 2015 to develop a technical brief on patient safety in NHs to include both short- and long-stay resident populations. Formally, AHRQ defines safety as “a type of process or structure that reduces the probability of an adverse event,”⁸ with an adverse event defined as harm to a resident as a result of medical care or in a health care setting.³ This definition is fairly nonspecific, and in conjunction with variability in the literature, suggests that safety can be conceptualized narrowly in terms of specific adverse events, or more broadly to include a number of measures reflective of care quality. There is currently no standard acceptance in the clinical or research arenas about which approach is most appropriate for NHs.

However, due to the purview established by AHRQ and the scope of a technical brief, we focused the overview of literature on a core set of NH safety measures currently in beta-testing mode within the AHRQ Patient Safety Organization Program Common Format.⁹ These core safety measures included falls with injury, pressure ulcers, medication errors, and infections. As this Common Format for NHs is in beta-testing, it is not currently required but provides a framework in which one might conceptualize safety in this setting. We discuss the strengths and weaknesses of this approach in the technical brief.¹⁰ Our methods involved multiple steps, including the identification of relevant literature and future research needs. First, we summarized existing systematic reviews in the 4 foci of the Common Format (ie, falls with injury, pressure ulcers, medication errors, and infections) and identified gaps in the existing research science based on these reviews. Second, we made recommendations for future research related to ways in which a definition based on the current Common Format might be more appropriately expanded to encompass safety issues relevant to both short- and long-stay NH residents.

Of note, there is overlap of the Common Format and the CMS quality monitoring system for NHs in that prevalence of falls, pressure ulcers, and a subset of infections are already routinely monitored in this national system (www.medicare.gov/nursinghomecompare). In addition, both falls and pressure ulcers represent 2 of the most common NH litigation complaints.¹¹ However, additional quality metrics are also required by CMS for routine monitoring and public-reporting

but are not specified in the Common Format. These include incontinence, functional decline, antipsychotic medication use, and unintentional weight loss. Each of these clinical outcomes has the potential to lead to 1 or more adverse events defined within the Common Format and also meet the criteria within the broad AHRQ definition of safety. Therefore, we discuss the potential that the Common Format set of adverse events may be too narrow to adequately define safety in the NH setting and suggest that inclusion of additional domains may be more appropriate, and amenable to intervention. Congruent with this perspective, the National Quality Forum recently endorsed unintentional weight loss as a safety indicator for long-term care residents.¹²

Methods

The goal of the larger AHRQ-funded technical brief¹⁰ on which this article is based was twofold: (1) to develop a research agenda on safety in the NH setting using the current literature as a starting point; and (2) to consider whether an existing paradigm for safety research, developed primarily in the hospital setting, would be appropriate to the NH setting. To accomplish these goals, we identified systematic reviews in each of the 4 safety areas defined within the Common Format to estimate the size of the literature, types of interventions evaluated, and study designs (as a crude measure of quality). We also gathered input from 7 key informants in the field and identified where there appeared to be gaps that might serve to inform a future research agenda.

Because of the breadth of literature, we focused only on systematic reviews rather than primary studies. We report a general overview of the types of studies included in each review and the review's area of focus. To supplement this information, we also conducted searches to determine the numbers of new studies that could potentially add to existing reviews.

We searched the published literature (MEDLINE and the Cumulative Index of Nursing and Allied Health Literature [CINAHL]) from 2005 to 2015 for systematic reviews and studies that specifically evaluated interventions related to the 4 key safety areas identified by the current AHRQ Common Format. We also updated the searches used in the systematic reviews from the end search date forward to identify newly published literature. The literature search is described in more detail in the technical brief.¹⁰

Two investigators independently screened systematic reviews against predetermined inclusion criteria to identify reviews or studies of interventions addressing the 4 safety areas. Discrepancies between investigators were resolved via discussion or review by a senior investigator. We used the Risk of Bias in Systematic Reviews (ROBIS) tool¹³ to assess the overall risk of bias of each systematic review. The ROBIS tool is designed to evaluate the rigor of the design and conduct of a systematic review and assesses a review's relevance, potential for bias in the study eligibility criteria, identification and selection of studies, data collection and study appraisal, and synthesis and findings.

Results

Summary of Available Systematic Reviews

We identified 36 systematic reviews addressing interventions relevant to the 4 adverse events identified in the Common Format (ie, falls, pressure ulcers, medication errors, and infections). The reviews meeting our inclusion criteria may have addressed multiple outcomes including, but not necessarily limited to, the targeted adverse events of interest. Some reviews also broadly targeted older adults and may include only a small number of studies conducted in NHs. We included these reviews to provide a comprehensive representation of the literature potentially relevant to older adults.

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