



JAMDA

journal homepage: www.jamda.com

Editorial

Staffing, Quality, and Productivity in the Nursing Home

John F. Schnelle PhD^a, Jurgis Karuza PhD^{b,c}, Paul R. Katz MD, CMD^{c,*}^a Center for Quality Aging, Vanderbilt University, Nashville, TN^b Division of Geriatrics & Aging, University of Rochester School of Medicine and Dentistry, Rochester, NY^c Baycrest Health Centre, University of Toronto, Toronto, Ontario, Canada

The link between nursing home (NH) staffing and quality of care has been a subject of great interest over the past several years and is by no means restricted to the United States.^{1,2} Although evidence suggests a relationship between quality and numbers of staff, turnover, professional competencies, teamwork, and nursing practices, the correlation is complex and by no means linear.^{3–9} The article by Tyler and colleagues,¹⁰ reported in this issue of the *Journal*, adds to this literature and makes several points that have policy implications related specifically to the issue of direct nurse staffing.

As noted by Tyler et al,¹⁰ the level of medical acuity in the NH has increased in recent years as evidenced by an increase in the proportion of skilled nursing facility (SNF) days and a rise in the average Case Mix Index (CMI) among all NH residents. Although there has been a commensurate increase in physical and occupational therapist hours per resident day (HPRD), surprisingly HPRD has remained flat for licensed nurses and nursing assistants providing direct care. This same point is made by the Centers for Medicare and Medicaid Services (CMS) Nursing Home Compare Web site that displays the *actual* staffing reported by every NH and the *expected* staffing for that same home based on the acuity level of the patients in the NH. The acuity level is determined by the NH's Resident Utilization Group System (RUGS) score that comes from the Minimum Data Set (MDS) data. Similar to the conclusions reported by Tyler et al,¹⁰ most NHs report licensed nurse and nurse aide staffing levels that are below what is expected based on the RUGS scores. These discrepancies between increased acuity and actual nurse staffing, underscored by Tyler et al¹⁰ and the CMS's Nursing Home Compare data, indicate the potential presence of quality problems. We furthermore believe that these quality problems may be worse than what is suggested by the data from Tyler et al¹⁰ and CMS.

The RUGS score, which is used to project expected staffing based on the labor time to provide care, is based on time data reported by NH staff under usual care and not optimal conditions. One cannot derive from the RUGS time studies how much time nurses and nurse aides reported to spend in separate care activities (eg, feeding assistance), as the RUGS labor estimates are aggregated across all care activities for residents who have different activities of daily living (ADLs) dependencies and medical needs. Although residents with

higher ADL dependencies are reported to consume more nursing time and increase the RUGS score used for reimbursement, there is evidence that the time used in the RUGS to estimate the nursing aide time for less physically dependent residents may be underestimated.

Research studies that have provided care under conditions that are documented to improve outcomes (definition of optimal care) have reported high labor estimates for residents that may be misclassified by the RUGS system. For example, many residents rated with lower dependency for the need for eating assistance (MDS scores 0–2) are known to require as much staff assistance time to produce optimal food intake outcomes as are the more physically dependent residents. The less physically dependent residents may not require physical feeding assistance but they do require supervision and prompting to promote acceptable food intake that is equally as time consuming as providing physical assistance.¹¹ A case can be made that this same scenario, in which less physically dependent but more cognitively impaired residents require more time than what is estimated by the RUGS because of their need to be prompted, applies to most other care activities. We believe if accurate measures of the time to provide care that *actually changed outcomes* were used, instead of the time reported by NHs under usual care conditions, that expected staffing would be higher than the average 2.4 HPRD for nurse aides that is currently generated by the RUGS and reported by Nursing Home Compare. If the expected time to provide effective care is higher than that estimated by the RUGS, then the discrepancies between actual and expected staffing would be even greater than is currently being reported, and, so one would assume, the related quality problems.

One might argue that the increase in physical therapy (PT) and occupational therapy (OT) hours reported by Tyler et al¹⁰ would compensate for the low nurse and nurse aide staffing, for at least the minority of patients who receive therapy services while in postacute care. However, we believe that the presence of PT/OT personnel only slightly reduces the time required by nurses and aides to provide care. The PT and OT hours, at best, would only reduce the time nursing aides would have to spend providing exercise, assuming that PT provides increased exercise during the 5 days per week that therapies are provided. This does represent some time savings but does not mitigate the need for licensed nurse time and only slightly reduces the need for nurse aide's hours. Studies that have objectively described the time to provide the type of care provided by aides 7 days per week and 24 hours per day have reported that staff requirements are primarily driven by incontinence care and feeding

DOI of original article: 10.1016/j.jamda.2013.05.013.

* Address correspondence to Paul R. Katz, MD, CMD, Baycrest Health Centre, University of Toronto, Toronto, Ontario, Canada.

E-mail address: pkatz@baycrest.org (P.R. Katz).

1525-8610/\$ – see front matter Copyright © 2013 – American Medical Directors Association, Inc.

<http://dx.doi.org/10.1016/j.jamda.2013.08.017>

assistance. Both of these latter care activities are not only time consuming but they must be delivered multiple times over 12 to 24 hours to be effective. PT and OT staff are not paid to provide this intensity of care 7 days per week nor do they typically see these care areas as their primary area of focus.

Based on our experience, we believe that the disconnect between the increasing medical and physical acuity levels of patients and the actual staffing levels in NHs is based on the fact that administrators plan staff nursing hours according to budget targets as opposed to accurate estimates of the time that is required to provide care to their residents.

One reason staff planning is driven by budgetary goals relates to the motivation to ensure profits, or at least minimize losses. A second reason is because NHs do not access technologies used by other industries to estimate staffing needs on a timely and accurate basis. If managers do not have an objective approach to project staffing needs based on their unique resident acuity, then, by default, they will use the more simplistic *budgetary focused* approach of minimizing staffing levels so as to lower costs and maintain a desired profit margin.

Fortunately there are technologies to project staffing needs based on computerized simulation technology and logic that was described in a report to CMS in 2002.¹² We believe the use of this approach could lead homes to an *objective approach*, which matches patients' needs with staffing levels more accurately than the simplistic budgetary focused approach.

Computerized simulations are the most direct approach to determine staffing requirements because they can be individualized to each work environment or NH. Such a simulation models realistic work environments and minimally requires information about several key areas that drive staffing needs. Information is needed about the type of care to be delivered by the care staff given the needs of its patient population, the time to provide that care, and the frequency that care should be provided. With regard to defining what care should be provided, the MDS provides a good starting point for at least those activities implemented by nurse aides. In a 2002 CMS report, MDS data were used to define 7 resident ADL categories that accurately encompassed 98% of all residents in 2 states.¹² The categories reflected different combinations of ADL assistance required by residents in 5 key areas: incontinent care, repositioning, feeding assistance, exercise, and ADL assistance. The frequency with which such care is to be provided and the time to provide that care per episode of care was defined from research studies or expert consensus (eg, repositioning for at-risk residents should occur every 2 hours during the day but with a somewhat lower frequency at night). Based on these data, the staffing requirements to provide care in any given NH could be individualized by the computer simulation based on their mix of residents, the architectural features of the home, which would affect travel time for staff to provide care, and other unique home characteristics (eg, do they use part-time staff or feeding assistants during meals, which is efficient and reduces overall full-time staffing equivalents projected to provide all care).

The simulation program generates numerous outputs that can be used to maximize efficient management but, most important, outputs project the amount of care that would likely be omitted given different staffing levels and assumptions about how efficient staff worked. In short, managers would have a realistic method to predict how much care could be provided given the unique characteristics of their resident population and the specific staffing level they are willing to schedule on any given day or shift. This type of information provides an empirical base for making management decisions about different staffing models that a home might use. For example, we believe that homes currently underestimate the efficiency advantages that would result if they used part-time staff at peak work periods or nontraditional workers to provide assistance during meals. These advantages would be very

obvious if the providers ran simulations in each home and particularly ran those simulations if they were working with reduced staff. More importantly, however, the routine use of simulations would alert managers to the high likelihood of serious quality problems if they staffed at low levels for a resident population that required extensive assistance even if budget targets for staffing were being met. A full explanation of how simulation works and how it provides an objective estimate of staffing needs is beyond the scope of this editorial, but is described in detail elsewhere.¹³

It is important to note that current simulation programs only model labor requirements of nurse aides only. Labor times relevant to licensed nurses and physicians would not be driven by ADL dependencies as much as other medical complexities, such as polypharmacy and multiple acute on chronic illnesses, including behavioral manifestations of dementia. Indeed, physicians are not even considered currently in the RUGS calculations, because they are reimbursed under Medicare with the implicit expectation that market forces will adjust physician staffing time accordingly. We contend that there is an urgent need to craft physician simulation models around various levels of patient acuity, given the emerging evidence base that relates improved care outcomes to physician presence in the NH, medical director certification, NH medical staff organization characteristics, and nurse-physician communication.^{14–18}

Despite the need to predicate staffing around the existing evidence base and a more robust staff modeling methodology as described previously, the reality is that many NHs report that they operate at a margin of only a few percentage points. If these reports are accurate, this limits the capacity for change. Resources remain constrained, and rather than increasing staff numbers, administrators demand that their providers be more “productive.” All one needs to do is interview front-line staff to understand the stress felt by those caught in the “productivity maze.” It is not only the expectation of providing more efficient day-to-day care, but also the pressure to adhere to a multitude of “best practices” and to optimize billing encounters that is pushing staff to their limits. Many physicians practicing in the NH, for example, do not believe they have adequate time to complete the tasks necessary to adhere to practice standards.¹⁹

Quantifying “productivity” is also difficult because the productivity for one provider is closely linked to how other providers perform in the NH and the larger systems of care. Information transfer is one prime example. Although the accurate and timely flow of information between sites of care is critical, information transfer is often inadequate and requires providers to spend countless hours retrieving necessary information rather than attending to bedside care. Although reforms such as Accountable Care Organizations and Bundled Payments will hopefully ameliorate this problem, given aligned incentives to keep patients out of the hospital, the problem will likely remain for years to come. Electronic medical records (EMR), once believed to be the solution, still elude most NHs and, even when present, often are not capable of linking with acute care referral sources.

The use of technology offers a promising avenue to increase productivity. Recently, Thorpe-Jamison and colleagues²⁰ found that the use of computer-generated rounding reports led to improved workflow. Still complicating any objective approach to staffing is that staff “productivity” often is not adequately measured, let alone factored into the “staffing equation.”

At the very least, the push for changes in staffing and productivity (not to mention professional competency) must come with a commitment to program evaluation and quality improvement efforts, such as lean six sigma, which identifies areas of inefficiency, develops targeted interventions that lead to efficiencies, and evaluates changes in outcomes. Although efficiency and productivity changes are important, not to be overlooked are the impact these efficiencies have on the residents' care outcomes, including quality of life.

Achieving all of the goals articulated in this essay will not be easy, given a system that continues to embrace acute care at the expense of institutionalized long term care. Whether we admit it or not, we are already at a crisis stage as regards our NH staffing models. All that we require are the resources necessary to further generate an evidence base that will ultimately demonstrate a better way to care for those who are most frail in our population.

References

1. Fujisawa R, Colombo F. The long-term care workforce: Overview and strategies to adapt supply to a growing demand. OECD Health Working Papers, No. 44. OECD Publishing 2009. Available at: <http://dx.doi.org/10.1787/225350638472>. Accessed August 30, 2013.
2. Harrington C, Choiniere J, Goldmann M, et al. Nursing home staffing standards and staffing levels in six countries. *J Nurs Scholarsh* 2012;44:88–98.
3. Castle NG. Nursing home caregiver staffing levels and quality of care: A literature review. *J Appl Gerontol* 2008;27:375–405.
4. Temkin-Greener H, Zheng N, Cai S, et al. Nursing home environment and organizational performance: Association with deficiency citations. *Med Care* 2010;48:357–364.
5. Bates-Jensen BM, Schnelle JF, Alessi C, et al. The effects of staffing on in-bed times of nursing home residents. *J Am Geriatr Soc* 2004;52:931–938.
6. Bourbonniere M, Eng Z, Intrator O, et al. The use of contracted licensed nursing staff in US nursing homes. *Med Care Res Rev* 2006;63:88–109.
7. Bowblis JR. Staffing ratios and quality: An analysis of minimum direct care staffing requirements for nursing homes. *Health Serv Res* 2011;46:1495–1516.
8. Rahman A, Stroker JK, Manning L. Staff assignment practices in nursing homes: Review of the literature. *J Am Med Dir Assoc* 2009;10:4–10.
9. Spilsbury K, Hewitt C, Stirk L, Bowman C. The relationship between nurse staffing and quality of care: A systematic review. *Int J Nurs Scholarsh* 2011;48:732–750.
10. Tyler DA, Feng Z, Leland NE, et al. Trends in postacute care and staffing in US nursing homes, 2001–2010. *J Am Med Dir Assoc* 2013;14:817–820.
11. Simmons SF, Schnelle JF. Feeding assistance needs of long term stay nursing home residents and staff time to provide care. *J Am Geriatr Soc* 2006;54:919–924.
12. Schnelle JF, Simmons SF, Cretin S. Minimum nurse aide staffing required to implement best practice care in nursing facilities. In: *Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes, Report to Congress, phase 2 final chap 3*. Washington, DC: US Department of Health and Human Services, Health Care Financing Administration; 2001–40.
13. Harrell C, Ghosh BK, Bowden R. *Simulation Using PROMODEL*. New York: McGraw Hill; 2000.
14. Katz PR, Karuza J, Intrator O, Mor V. Nursing home physician specialists: A response to the workforce crisis in long term care. *Ann Intern Med* 2009;150:411–413.
15. Young Y, Inamdar S, Dichter BS, et al. Clinical and nonclinical factors associated with potentially preventable hospitalizations among nursing home residents. *J Am Med Dir Assoc* 2011;12:364–371.
16. Rowland FN, Cowles M, Dickstein C, Katz PR. Impact of medical director certification on nursing home quality. *J Am Med Dir Assoc* 2009;10:431–435.
17. Katz PR, Karuza J, Lima J, Intrator O. Nursing home medical staff organization: Correlates with quality indicators. *J Am Med Dir Assoc* 2011;12:655–659.
18. Lukas A, Mayer B, Fialva D, et al. Treatment of pain in European nursing homes: Results from the Services and Health for Elderly in Long Term Care (SHELTER) study. *J Am Med Dir Assoc* 2013;14:821–831.
19. Caprio TV, Karuza J, Katz PR. Profile of physicians in the nursing home: Time perception and barriers to optimal medical practice. *J Am Med Dir Assoc* 2009;10:93–97.
20. Thorpe-Jamison PT, Culley CM, Perera S, Handler M. Evaluating the impact of computer generated rounding reports on physician workflow in the nursing home. *J Am Med Dir Assoc* 2013;14:358–362.