

Letters

RESEARCH LETTER

Temporal Trends in the Numbers of Skilled Nursing Facility Specialists From 2007 Through 2014

Residents of nursing homes (NHs) comprise a medically complex and vulnerable population with many persons experiencing multiple comorbid conditions, frailty, and advanced dementia. Health care professionals such as physicians, nurse practitioners (NPs), and physician assistants (PAs) play an important role in managing their care. An Office of Inspector General Report¹ noted that specialization of health care professionals in NH care could potentially improve care through increased presence of health care professionals in NHs, enhanced knowledge in the care of patients with medically complex conditions, and better understanding of the regulatory environment. On the contrary, specialization in 1 setting of care could result in increased fragmentation of care, giving rise to concerns about medical errors and lack of care coordination. Little empirical research is available about the number of clinicians who primarily practice in NHs or the proportion of NH care delivered by these clinicians.² Using national Medicare Part B claims from 2007, 2010, and 2014, we characterized temporal trends in the number of physicians, NPs, and PAs concentrating their practice in the NH or skilled nursing facility (SNF) setting (ie, SNFists), the fraction of all NH and SNF claims generated by SNFists, and state variation in this phenomenon in 2014.

Methods | The Medicare Part B Carrier File includes Evaluation and Management codes based on common sites of service: the nursing home, outpatient office, hospital, emergency department, a patient's home, and assisted living,

custodial care facilities. Using Evaluation and Management codes from 20% of all Medicare Part B Carrier file claims from 2007, 2010, and 2014, we identified all physicians, NPs, and PAs who billed more than 90% of all their visits in the NH setting. The 90% threshold is consistent with a prior study of hospitalist care in the United States³; in a sensitivity analysis, we relaxed this threshold to 50%. Temporal trend comparisons for 2007, 2010, and 2014 were performed using variance-weighted least squares. We further characterized, in each state, the fraction of all outpatient visits in NHs that were accounted for by SNFists. An institutional review board waiver was obtained from Brown University.

Results | Between 2007 and 2014, the proportion of physicians ever billing in an NH decreased from 13.7% to 9.8% (test of trend, $P < .001$) while the number of physicians classified as SNFists increased by 48.2% (1496 vs 2225), increasing from 0.34% to 0.49% of all physicians (Table). The number of NPs or PAs classified as SNFists nearly doubled (1678 vs 3074). The proportion of NPs and PAs classified as SNFists remained stable because of increasing numbers of these clinicians. The proportion of all Evaluation and Management bills for care in an NH or SNF submitted by clinicians classified as SNFists increased from 11.6% to 14.3% among physicians (test of trend, $P < .001$) and from 10.4% to 17.2% among NPs and PAs (test of trend, $P < .001$). Between 2007 and 2014, the proportion of total SNF billing accounted for by SNFist clinicians increased from 22.0% to 31.5% (test of trend, $P < .001$). The SNFists' proportion of total NH billing varied by state, amounting to nearly 50% in Delaware, Hawaii, Tennessee, Connecticut, and Massachusetts. In a sensitivity analysis using a threshold of more than 50% of visits in the SNF, the number of physician SNFists increased from 2551 to 3529 and the number of NP or PA SNFists increased from 3267 to 5477.

Table. Physician, Nurse Practitioner, and Physician Assistant Billing in 2007, 2010, and 2014

Billing Category	2007	2010	2014
Physicians, No.	435 943	419 299	459 895
Ever billing in an SNF, ^a No. (%)	59 724 (13.7)	50 814 (12.1)	45 070 (9.8)
Billing ≥90% in an SNF, ^a No. (%)	1496 (0.34)	1697 (0.40)	2225 (0.49)
Nurse practitioners or physician assistants, No.	64 393	80 029	131 986
Ever billing in an SNF, ^b No. (%)	7528 (11.7)	8309 (10.4)	12 470 (9.5)
Billing ≥90% in an SNF, ^b No. (%)	1678 (2.6)	2031 (2.5)	3074 (2.3)
Evaluation and management code bills at SNF, No.	4 731 367	4 538 967	5 205 865
By physician billing ≥90% in an SNF, ^c No. (%)	550 425 (11.6)	584 952 (12.9)	747 106 (14.3)
By nurse practitioner or physician assistant billing ≥90% in an SNF, ^c No. (%)	49 145 (10.4)	581 235 (12.8)	895 830 (17.2)

Abbreviation: SNF, skilled nursing facility.

^a For the physicians ever billing in an SNF or physicians billing 90% or more in an SNF, the denominator is physicians billing Medicare in that year.

^b For nurse practitioner or physician assistant billing, the denominator is nurse

practitioners or physician assistants billing Medicare in that year.

^c The denominator for physicians, nurse practitioners, and physician assistants billing at 90% or more is the number of evaluation and management codes billed in a nursing home or SNF in the year 2007, 2010, or 2014.

Discussion | The care of frail and medically complex NH residents is increasingly performed by NPs and PAs who focus nearly exclusively in this site of care. In some states, SNFists accounted for nearly half of the total billing in the NH setting of care. Future research is needed to understand how this specialization of care affects not only care delivery but the overall experience of frail, elderly patients.

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1. Levy C, Epstein A, Landry LA, Kramer A, Harvell J, Liggins C. Physician practices in nursing homes: final report. Washington, DC: Office of Disability, Aging and Long-Term Care Policy; 2006. <https://aspe.hhs.gov/basic-report/physician-practices-nursing-homes-final-report>. Accessed February 2, 2017.
2. Kuo YF, Goodwin JS. Association of hospitalist care with medical utilization after discharge: evidence of cost shift from a cohort study. *Ann Intern Med*. 2011;155(3):152-159.
3. Kuo YF, Sharma G, Freeman JL, Goodwin JS. Growth in the care of older patients by hospitalists in the United States. *N Engl J Med*. 2009;360(11):1102-1112.