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CLINICAL INVESTIGATION

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Medical director presence and time in U.S. nursing homes, 2017–2023

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Abstract

Background: Federal regulations require all nursing homes to have a medical director, where medical directors oversee resident medical care and develop, implement, and evaluate resident care policies and procedures that reflect current standards of practice.

Methods: This descriptive study examined medical director: (1) presence or absence and the amount of time spent from 2017 to 2023; (2) presence and time by ownership type; (3) variations in presence and time across states; and (4) overall CMS deficiencies for violations of medical director regulations. This study used federal Payroll-Based Journal (PBJ) data on staffing positions for the period of 2017–2023, along with federal nursing home ownership data and deficiencies data for 2023.

Results: More than a third of U.S. nursing homes (36.1%) reported zero medical director presence in Quarter 1, 2023. Medical director presence fluctuated between 2017 and 2023 with a decline over the past 4 years. Among nursing homes reporting a medical director, the medical director was on payroll for an average 36 min per day or 4.2 h per week per facility, and less than 1 min per resident day. Medical director presence and time varied significantly by ownership type and state. For-profit nursing homes reported a lower rate of medical director presence (61.4%) compared to non-profit (71.3%) and government (66.5%) nursing homes and reported that medical directors spent less time in the facilities. Facilities seldom (0.2%) receive regulatory deficiencies for medical director requirements.

Conclusions: Though medical directors have a critical role in overseeing clinical care, some nursing homes report no medical director time and those that do report about 4 h per week. Together, these findings may indicate the need for improvement. More research is needed to understand these variations and the extent to which medical director regulations are being followed by nursing homes and enforced by regulators.

KEYWORDS
care management, medical director, nursing homes, payroll-based journal staffing

INTRODUCTION

Federal regulations require all nursing homes to have a physician medical director (MD) who oversees the medical care and other services provided to residents and is responsible for helping to develop, implement, and evaluate resident care policies and procedures to ensure that they reflect current standards of practice.[1] The MD is required to participate in each nursing home's quality assessment and assurance (QAA) committee, and to organize and coordinate physician and professional services related to resident care. In addition, MDs are expected to develop educational programs and infection control policies sufficient to ensure quality of medical care; respect individual resident rights; promote person-directed care; and monitor and provide feedback on the performance of healthcare practitioners.[1]

MDs can play a critical role in improving care for residents in nursing homes.[2,3] AMDA—The Society for Post-Acute and Long-Term Care Medicine states that nursing home MDs have four clearly defined roles: (1) physician leadership, (2) patient care–clinical leadership, (3) quality of care, and (4) education, information, and communication.[4] The 2020 Coronavirus Commission on Safety and Quality in Nursing homes stressed the critical importance of MDs in ensuring infection control and emergency management.[5]

A 2009 survey of NH MDs found that most physicians were MDs in two facilities and also provided primary care (i.e., served as attending physicians) to residents in four facilities.[6] The study of MDs also found they generally spent 12 h per week in a facility and 2.3 h per week as MDs. Most were AMDA members and 41%–42% were certified MDs and/or had a certificate of added qualifications in geriatric medicine.[6] Another 2009 study indicated that the presence of a certified MD in long-term care homes was an independent predictor associated with up to a 15% improvement in quality.[7]

Few recent studies have examined the extent to which MDs are present in nursing homes.[8,9] This descriptive study uses MD data from the Centers for Medicare & Medicaid Services (CMS) Payroll-Based Journal (PBJ) system collected from U.S. nursing homes.[10]

This research had four specific aims to examine MD: (1) presence or absence and the amount of time spent from 2017 to 2023; (2) presence and time by ownership type; (3) variations in presence and time across states; and (4) overall CMS deficiencies for violations of MD regulations for the last three survey cycles.

Key points

- Under the federal requirements for nursing homes, every facility must have a designated medical director who is responsible for implementing care policies and coordinating medical care, and who is directly accountable to the management of the institution.
- More than a third of U.S. nursing homes (36.1%) reported zero medical director time in 2023.
- For-profit nursing homes reported a lower presence and less time spent by medical directors.

Why does this paper matter?

Under the federal requirements for nursing homes, medical directors play a critical role in overseeing resident care. It is important to understand the extent to which medical directors are providing leadership in nursing homes and whether their presence and time spent varies by ownership type and state.

METHODS

Our analysis included all nursing homes from the 50 U.S. states and the District of Columbia. Puerto Rico was excluded due to its limited number of facilities. This study was specifically focused on MDs of nursing homes and excluded other non-director physicians, physician assistants, nurse practitioners, and clinical nurse specialists.

Medical director data

This study used CMS Payroll-Based Journal (PBJ) data on non-nurse staffing positions which nursing homes report daily. We included all fulltime or parttime MD employees or contract employees (almost 60% were reported as contract employees). We collected and summarized the publicly available data for 25 quarters, from 2017 through Q1 of 2023.

The reporting of nursing home staffing payroll data was mandated by the 2010 Patient Protection and Affordable Care Act,[11] although CMS did not implement this

requirement until passage of the 2014 IMPACT Act.[12] CMS began making the data available in 2017. The 2017 data may be less accurate than those submitted beginning in 2018. The PBJ data are self-reported by nursing homes, and subject to random periodic audits by CMS.

Ownership data and deficiency data

The staffing data were linked to ownership and deficiency data from the CMS nursing home provider files. Ownership data were obtained from the CMS nursing home provider information dataset,[13] which contained a slightly larger number of nursing homes ($n = 14{,}956$) which we matched to the PBJ staffing dataset ($n = 14{,}699$). The merged dataset contained 14,659 nursing homes.

We also used CMS deficiency data that state surveyors issued for violations related to meeting federal MD regulations (42 CFR 483.70(g)). Nursing homes can be cited for "Responsibilities of medical director" (Tag F841) if the surveyor's investigation shows the facility failed to: (1) designate a physician to serve as medical director; or (2) ensure the medical director fulfilled their responsibility for implementing resident care policies or coordinating medical care in the facility.[14] This information was obtained from the CMS health deficiencies dataset which included deficiencies for the last 3 years' nursing home survey cycles.[15]

Analyses

The study data were analyzed and illustrated using Microsoft Excel (a spreadsheet software for data organization and analysis), PyCharm (an Integrated Development Environment (IDE) for Python programming), and Tableau (a data visualization tool).

For this study, we created three medical director measures:

- *Medical director presence*: The extent to which nursing homes reported any MD hours during each quarter in PBJ data. Any MD time during the quarter was categorized as having a direct presence or no presence.
- *Medical director minutes per day* (*MPD*): Because the average MD time per day reported in hours was small, we converted the daily time to minutes (hours were multiplied by 60 min).
- *Medical director minutes per resident day* (*MPRD*): In order to take into account differences in facility size, each nursing home's average daily MD minutes were divided by its average daily census.

We conducted a descriptive analysis of the MD measures by calculating means, standard deviations, and medians by quarter from 2017 through the first quarter of 2023. The analysis of MD MPD and MPRD for Q1 2023 excluded nursing homes that did not report MD time during the quarter, unless indicated otherwise. We also examined the longitudinal trends for MD staffing from 2017 through the first quarter of 2023.

Ownership and state variations

MD staffing was examined by ownership categorized as for-profit, non-profit, or government owned. We used the Chi-square test for independence and the Kruskal–Wallis H test to examine categorical differences in MD staffing presence and time by ownership for the first quarter (Q1) of 2023. We also examined variations by states for the first quarter of 2023.

The Kruskal–Wallis test was used to analyze MD MPD and MMPR. This non-parametric test was chosen because, unlike other tests, it does not assume that MD time is normally distributed. Visual inspection and statistical testing indicated that the MD hours were not normally distributed overall. The Shapiro–Wilk MPD distribution was $(W) = 0.46$ $(p < 0.001)$ and the within ownership for-profit category was $W = 0.47$ $(p < 0.001)$; non-profit was $W = 0.56$ $(p < 0.001)$; and government was $W = 0.39$ $(p < 0.001)$.

Deficiencies

Finally, we examined deficiencies issued by states for violations of regulatory requirements. We examined the total number of deficiencies across all states and examined the number cited as causing harm or jeopardy to residents.

RESULTS

Medical director staffing, Quarter 1, 2023

Table 1 shows that, during the 90-day period in Q1 2023, more than a third (36.1%) of the 14,699 U.S. nursing homes reported zero MD time. In those nursing homes reporting a MD ($n = 9396$), mean MD minutes per day (MPD) were 36.1 (SD = 59.6) and minutes per resident day (MRPD) were 0.4 (SD = 1.18), or less than one half of 1 min per resident day. Among nursing homes reporting a MD, the median facility provided 20.0 MD MPD and 0.3 MD MPRD.

TABLE 1 Nursing homes reporting any medical director time and mean and median minutes for all nursing homes and by ownership, Quarter 1, 2023.

	All nursing homes	Nursing homes reporting any medical director time	For-profit reporting any medical director time	Non-profit reporting any medical director time	Government reporting any medical director time
Providers	14,699	9396	6461	2314	581
Residents per nursing home	81.3	81.0	84.5	71.8	81.0
Percent NHs reporting any medical director time	63.9%	63.9%	61.4%	71.3%	66.5%
Median minutes per day (MPD)	8.7	20.0	17.0	18.0	19.4
Mean minutes per day (MPD)	23.1 (SD: 50.7)	36.1 (SD: 59.6)	35.2 (SD: 54.3)	35.3 (SD: 55.1)	51.4 (SD: 110.2)
Median minutes per resident day (MPRD)	0.1	0.3	0.3	0.3	0.3
Mean minutes per resident day (MPRD)	0.3 (SD: 1.0)	0.4 (SD: 1.2)	0.4 (SD: 0.8)	0.5 (SD: 1.2)	0.6 (SD: 1.5)
% of days NHs reported any medical director time	88.5%	82.0%	–	–	–

Note: Forty NHs had missing ownership data.

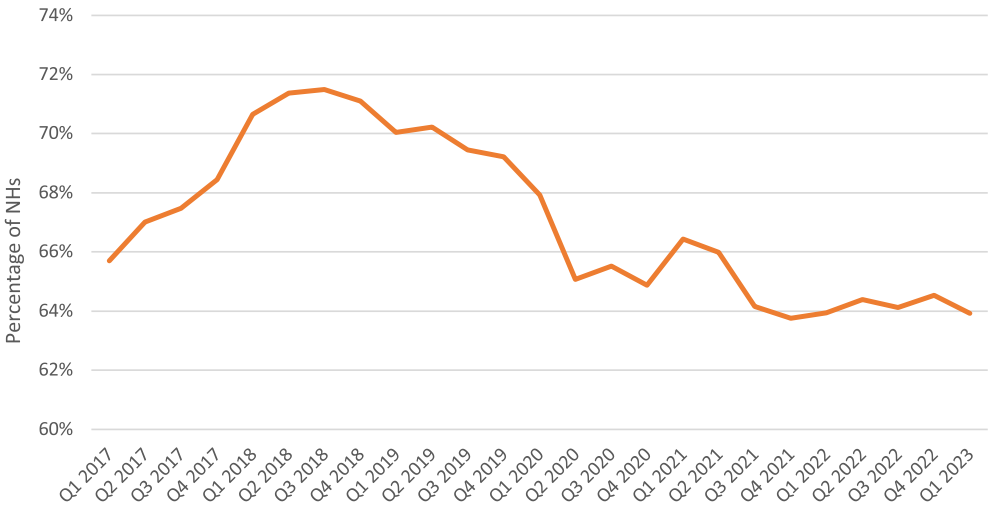

FIGURE 1 Percentage of nursing homes reporting any medical director time, 2017–2023. Data derived from CMS Payroll-Based Journal staffing data and are shown for all quarters from Q1 2017 through Q1 2023.

In facilities reporting a MD in their PBJ data, the MD was not present on most days. [*Note*: this would not include MD time spent providing primary care services to individual residents.] During quarter one of 2023, a MD was present for an average of 16.2 days in the quarter (18.0% of days), or 1.3 days per week. This means that among these nursing homes, the MD was on the payroll a little over once a week for an average of 4.2 h per week. The average daily shift for a MD was 3.3 h.

Among all nursing homes, facilities reported 23.1 MPD ($\sigma = 50.7$) and 0.28 MPRD ($\sigma = 0.98$). The median nursing home reported 23.1 MPD and 0.13 MPRD of MD time. A MD was reported on only 11.5% of days (152,252 of 1,322,910) during the 90-day period in Q1 2023. Nationwide, MDs accounted for only 0.6% of non-nurse staffing hours in Q1 2023.

Longitudinal trends (2017–2023)

Figure 1 shows that the share of nursing homes reporting MD staffing increased slightly from 2017 to 2018, rising

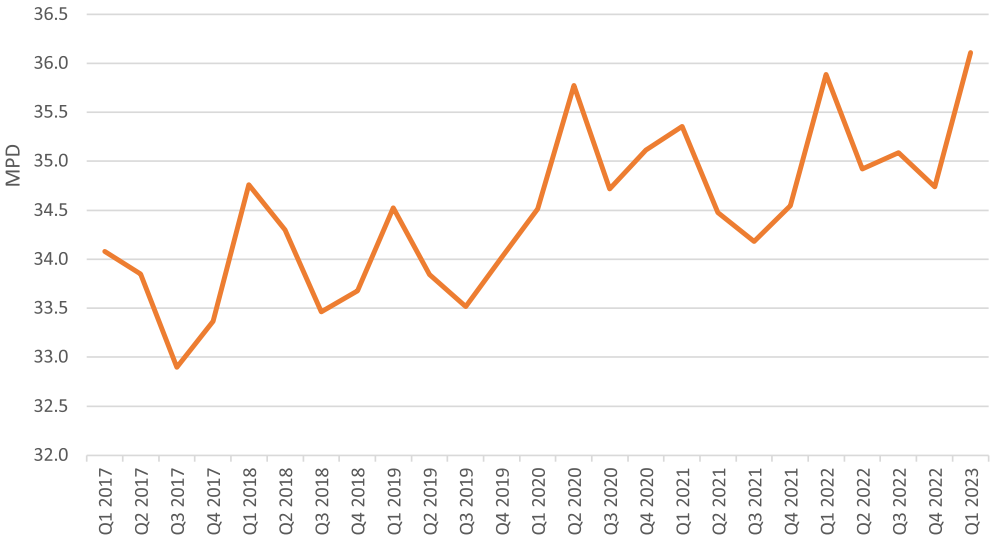

FIGURE 2 Medical director minutes per day (MPD) in nursing homes reporting a medical director, 2017–2023. The data indicated fluctuations from quarter to quarter, with a slight overall increase from 34.1 MPD in Q1 2017 to 36.1 MPD in Q1 2023.

TABLE 2 Percent nursing homes reporting any medical director time and mean minutes per day for NHs reporting medical director time by ownership, Quarter 1, 2023.

	Total nursing homes	Average residents per facility	Percent reporting any medical director time	Mean minutes per day for NHs reporting any medical director time
U.S. nursing homes	14,699	81.0	63.9%	36.1 (SD: 59.6)
For-profit	6461	84.5	61.4%	35.2 (SD: 54.3)
Non-profit	2314	71.8	71.3%	35.3 (SD: 55.1)
Government	581	81.0	66.5%	51.4 (SD: 110.2)
Significance test			$\chi^2 = 108.2$[a] $p < 0.001$	$H = 43.0$[b] $p < 0.001$

Note: Forty NHs were missing ownership data.
[a]Chi-square test.
[b]Kruskal–Wallis test.

from 65.7% in Q1 2017 to 71.5% in Q3 2018, but then steadily decreased to 63.9% in Q1 2023.

Figure 2 shows that MD minutes per day (MPD) in nursing homes reporting a MD time increased from 34.1 MPD in Q1 2017 to 36.1 MPD in Q1 2023. MPD varied by quarter. In most years—excluding 2020 and 2022—Q1 (January–March) yielded the highest MPD and Q3 (July–September) had the lowest MPD. From 2017 to 2023, the average MPD in first quarters was 35.0 ($n = 7$) while the average MPD in third quarters was 34.0 ($n = 6$).

MD minutes per resident day (MPRD), a nationwide ratio accounting for facility differences in resident census, fluctuated from 2017 to 2023. The nationwide MPRD among nursing homes reporting MD time held between 0.37 MPRD and 0.39 MPRD from 2017 to the end of 2019, but increased significantly in the height of the pandemic, peaking at 0.48 in Q1 2021. The increase in ratio was driven largely by a decline in resident population during the peak of the COVID-19 pandemic. MPRD has declined as resident census has rebounded.

Medical director staffing by ownership type

Table 2 shows that MD presence varied significantly based on ownership type of U.S. nursing homes in Q1 of 2023 (Chi-square $\chi^2 = 108.2$, $p < 0.001$). For-profit nursing homes were less likely to report having any MD time (61.4%) compared to government facilities (66.5%) and non-profit facilities (71.3%) in Q1 2023.

For facilities reporting MD time, the MD minutes per day (MPD) also varied significantly by ownership type (Kruskal–Wallis $H = 43.0$, $p < 0.001$). Government nursing homes provided the highest MD time (51.4 MPD),

followed by non-profit (35.3 MPD), and then for-profit facilities (35.2 MPD) in Q1 2023.

State variation

Figure 3 shows that MD presence varied considerably by state ($n = 52$) in Q1 2023. Across states, MD presence ranged from 45.0% to 86.0%. In some states (Montana, Georgia, Utah, Nevada), less than half of nursing homes reported MD time. In other states (i.e., Arkansas, West Virginia, Connecticut), more than 80% of nursing homes reported MD time. A Chi-square test indicated significant differences in the likelihood of a nursing home having a MD across states ($n = 52$; $\chi^2 = 479.7$, $p < 0.001$) (no table shown).

Figure 3 shows that for those states reporting a MD, the time spent significantly varied by state (Kruskal–Wallis H: 1692.2; $p < 0.001$). New York reported an average 112 MD MPD among nursing homes reporting MD time. Alaska (83.8 MPD), Vermont (68.0), DC (60.5), and New Jersey (60.0) averaged at least an hour of MD time. South Dakota (8.5 MPD), Nebraska (11.4), Iowa (11.5), and Minnesota (12.7) averaged less than 15 min.

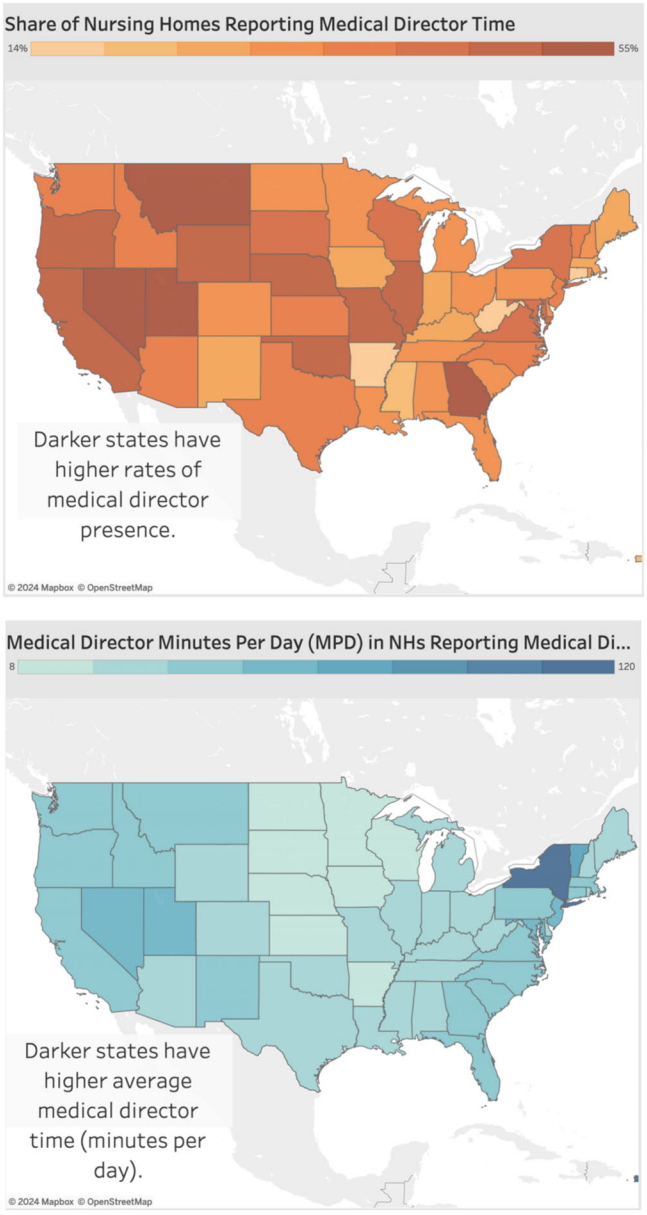

FIGURE 3 Medical director presence and time by state in U.S. nursing homes reporting medical director, Q1 2023. Darker shades (orange) indicate higher rates of reported medical director presence and higher medical director time (blue) in terms of minutes per day.

Deficiencies for medical director regulatory violations

Federal data on the last three health inspection cycles (approximately 3 years) indicates that nursing homes were rarely cited for F841. Nationwide, surveyors identified a total of 78 deficiencies during the last three health inspection cycles, according to CMS. Of those 78 deficiencies, 15 (19.2%) were cited as causing harm, including 8 (10.3%) which were cited as immediate jeopardy.

DISCUSSION

CMS requires all nursing homes to have a physician as a MD to oversee care and services for residents. Our analysis finds more than a third of U.S. nursing homes (36.1%) reported zero MD hours in Q1 2023, a decline from about 28% of NHs in 2018. The failure to have a present and engaged MD could result in serious harm or jeopardy to residents because MDs are charged with overseeing medical care, ensuring that policies and procedures meet current standards of practice, ensuring that quality assessment and assurance reviews are conducted, overseeing infection control policies, and more (as described above).

It is unknown whether some NHs do not have MDs, in violation of the regulations, or whether NHs are simply not reporting MD time. Potential reasons for failure to report time include that NHs have not established mechanisms for obtaining and reporting the data from MDs as required or that MDs are not cooperating with the reporting requirements.[16] It is also possible that hours could be overreported.

Among nursing homes reporting a MD, the study showed that MD time on the payroll was reported to be an average of 36.1 MD minutes per day (MPD) or about

4.2 h per week per facility. When MD minutes are calculated per resident day, the MPRD time is 0.45 (less than half of a minute) or 3.15 min per week.

Considering the CMS regulatory requirements for MDs, the average acuity of NH residents, and the serious quality problems exposed during the COVID-19 pandemic, medical director time warrants serious discussion. Of note, the reported 4.2 h per week per facility are higher than the 2.3 h per week reported in a 2009 survey of MDs,[5] and higher than a recent study that reported fewer than 2 h per week of MD time in Ontario.[17]

The low reports of MD time could be related to reporting problems. Audits and interviews would be necessary to determine why such a large percentage of nursing homes are not reporting. The PBJ Policy Manual notes several challenges in identifying the exact hours a physician spends performing MD activities versus primary care activities. CMS states that to improve accuracy, the reported data should be auditable and verifiable through either payroll, invoices, and/or tied back to a contract. Further, nursing homes must also use a reasonable methodology for calculating and reporting the number of hours spent conducting primary responsibilities. For example, CMS notes, "if a medical director is contracted for a certain fee (e.g., per month) to participate in Quality Improvement meetings and review a certain number of medical records each month, the facility shall have a reasonable methodology for converting those activities into the number of hours paid to work."[16]

The primary limitation of the study is the accuracy of MD data. Although CMS publicly reports both nursing and non-nursing PBJ staffing data, it is not clear that CMS is monitoring the quarterly data and investigating obvious violations of the reporting requirements and/or the MD requirements. CMS claims that it conducts periodic audits of PBJ data, which would require comparing MD timesheets or invoices to the time entered in PBJ. Although reported numbers have grown worse over the past 4 years, CMS has not brought this problem to the public's attention. Advocacy organizations have long encouraged CMS to not only conduct quarterly monitoring of PBJ data at the central CMS level but also to establish a mechanism for sanctioning nursing homes for failing to report data and for obvious violations of nursing and non-nurse staffing regulations. In addition, because this study covers time during the COVID-19 pandemic, there may be work time spent off-site or in teleconferences, although this should have been reported on the PBJ data if they were part of the MD's activities.

This analysis shows significant variation in MD staffing by ownership type. Only 61.4% of for-profit nursing homes reported any MD hours, which was significantly less than non-profit (71.3%) and moderately less than government (66.5%) nursing homes in the first quarter of 2023. This suggests that for-profit facilities make MD time a lower priority than not-for-profit and government facilities.

The ownership findings are consistent with existing research on ownership type and nurse staffing levels, which shows that for-profit facilities provide lower levels of RNs, LPNs, and CNAs compared to facilities in other ownership categories.[18–21] The significant percentage of homes reporting little to no MD involvement, particularly among for-profit facilities, raises concerns about the consistency and quality of medical care provided to residents in these facilities. Perhaps nursing homes are not allocating sufficient resources to provide for adequate MD time and expertise. This finding is consistent with numerous studies showing that, on average, for-profit facilities have lower staffing and poorer quality than non-profit or government-owned facilities. In addition, numerous studies have found strong correlations between nurse staffing and quality, particularly in respect to registered nurses.[22]

MD presence and time also varies significantly by state. This finding suggests systemic differences at the state level in terms of MD services. Though many U.S. nursing homes appear to have little to no MD presence, this study found that federal enforcement data indicate that nursing homes are rarely cited for "responsibilities of medical director" (F841). These data suggest that CMS is not reviewing information on MDs and may not be enforcing its MD requirements. Surveyors may also lack adequate guidelines for evaluating these regulatory requirements. Numerous studies over the years have found that poor nursing home care and practices are significantly under-cited, even when they result in harm. This under-reporting is likely exacerbated for requirements, such as those regarding a MD, for which direct and present causality are more difficult to investigate.[23]

Given the extensive regulatory responsibilities of NH MDs, how much time should MDs spend in order to meet the regulatory requirements and to meet professional standards? CMS does not specify the amount of time MDs are expected to spend nor has CMS reported conducting any time studies related to MD activities and responsibilities. Moreover, we did not find specific professional guidelines for MD time in nursing homes.

There are many inherent challenges for MDs to have an impact on nursing home care. Although MDs are expected to provide peer-level feedback to attending physicians, they may have limited impact on improving care provided by attending physicians. The regulations require that MDs are knowledgeable about current standards of practice and use this knowledge as a basis for overseeing medical services. However, given the significant time

limitations identified in this study, this often may not be the case. It is not uncommon for the MD to play a rather limited role in nursing home care, including serving as an interdisciplinary team member. These issues should be evaluated during the CMS survey and certification process, but it is not clear that surveyors are trained and able to make this type of evaluation.

One approach to improving MD's practice is to require certification. The American Board of Post-Acute and Long-Term Care Medicine, Inc. (ABPLM) recommends and offers a MD certification program.[24] In 2021, California passed legislation requiring certification of all nursing home MDs within 5 years of being hired.[25]

Some residents and their advocates have complained about having limited access to MDs. This is compounded by the fact that nursing homes are not required to disclose the name of MDs, making it difficult for families and advocates to find and contact MDs serving their facilities. AMDA has proposed legislation that has been introduced to require nursing homes to be more transparent in reporting the name of the MD.[26–28] These efforts are consistent with President Biden's nursing home initiative to improve nursing home transparency.[29] Public reporting of the MD names and contact information would be valuable for residents and families. CMS has recently revised their current managing employee definition in §424.502 to explicitly include SNF and hospice MDs and administrators, which may improve reporting.[30]

Public reporting of names would also allow for monitoring the number of nursing homes with the same MD. Without reporting the names, there is no way to determine how many MDs are serving multiple nursing homes, which could be a practice in some nursing home chains. Some MDs may oversee more homes than are feasible to manage (16 facilities in one reported case).[26]

This article highlights significant gaps in MD staffing in U.S. nursing homes and the need for enhanced oversight and accountability for MD services. Further, it raises questions about the quality and transparency of MD data, including potential ambiguities (i.e., inclusion of indirect services like phone consultations). CMS should ensure that nursing homes are meeting federal requirements related to MDs by strengthening enforcement and consider issuing guidelines about the amount of time MDs are needed to meet regulatory requirements.

Future research is needed to examine the quality and accuracy of MD data, explore the causes of ownership and state differences in MD presence, examine variations by rural and urban areas, and assess the relationship between MD time and resident outcomes. Future studies should also examine the amount of time spent by MDs, the availability of MDs, MD compensation, and satisfaction with their positions in U.S. nursing homes. One recent survey of MDs in Canada found that although most MDs were satisfied or extremely satisfied (75%) with their roles, dissatisfaction was associated with pandemic stress, increased hours and responsibilities, inadequate remuneration, lack of authority to make decisions, and lack of acknowledgement that physicians add value to the interdisciplinary team.[17]

AUTHOR CONTRIBUTIONS

Data acquisition: Eric L. Goldwein. *Study design*: Eric L. Goldwein, Richard J. Mollot, Mary Ellen Dellefield, and Charlene A. Harrington. *Data analysis and interpretation*: Eric L. Goldwein, Richard J. Mollot, Mary Ellen Dellefield, and Charlene A. Harrington. *Drafting of the manuscript*: Eric L. Goldwein, Richard J. Mollot, Mary Ellen Dellefield, Michael R. Wasserman, and Charlene A. Harrington. *Critical revision of the manuscript*: Eric L. Goldwein, Richard J. Mollot, Mary Ellen Dellefield. Michael R. Wasserman, and Charlene Harrington.

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CONFLICT OF INTEREST STATEMENT

The authors have no financial conflicts of interest as they relate to the submitted paper or its methodology. The authors have no personal conflicts of interest associated with the submitted paper. The authors have no potential conflicts of interest in terms of any circumstance or competing interest that could be construed or perceived as influencing the interpretation of the results prior to the time the manuscript was submitted.

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The Long Term Care Community Coalition and the University of California had no role in the design, methods, analysis, or preparation of the paper.

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