Predictors of Physician Nursing Home Practice: Does What We Do in Residency Training Make a Difference?

John D. Gazewood, MD, MSPH; David R. Mehr, MD, MS

Background and Objectives: The number of physicians who care for nursing home patients is inadequate. This study determined predictors of current nursing home practice, including whether making nursing home rounds with an attending physician during residency is a predictor of subsequent nursing home practice. Methods: We used a cross-sectional survey to study 170 family physicians in private or academic practice in a large, university-based Midwestern family practice residency program. Results: The response rate was 86%. Fifty-five percent of respondents had an active nursing home practice. Rounding in a nursing home with an attending during residency had no relation to current nursing home practice. In comparison to physicians without an active nursing home practice, physicians with an active nursing home practice were more likely to reside in a smaller community, have a hospital practice (60.5% versus 39.5%), see more outpatients per week (105 versus 78), and work more hours per week (57 versus 49). In a logistic regression model, decreasing community size, number of hours worked per week, and having an active hospital practice were associated with active nursing home practice. Conclusions: Factors other than educational experience have an effect on physician nursing home practice.

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About 5% of the over-65 population, an estimated 1.4 million Americans, currently reside in nursing homes, and more than 40% will reside at least temporarily in a nursing home at some point during their lives. As the number of aged Americans grows over the next 40 years, the number of nursing home residents will increase to almost 5 million by the year 2030.

The rapid growth in the need for long-term care, coupled with other changes in the US health care system, make it difficult to develop accurate workforce projections for nursing home care. However, several studies suggest that the number of physicians providing care to nursing home patients is already inadequate. Further, projected slow growth in the supply of academic geriatricians and private practice geriatricians raises concerns that the physician workforce may continue to be inadequate to meet the needs of a growing, and increasingly frail, nursing home population. It is not clear that our training programs will produce adequate numbers of generalist physicians willing to go to nursing homes.

Few studies have examined predictors of whether physicians have a nursing home practice. A 1997 national survey identified physician factors as the strongest predictors. These included 1) being a general practitioner, family physician, or a general internist and 2) being in solo practice or in a partnership. In earlier surveys, predictors of nursing home practice included older age of the physician, longer working hours, and working in a smaller community.

The influence of medical education on physician participation in nursing home care is less certain. Authors suggest that training in a nursing home setting improves knowledge about nursing home medical issues and improves attitudes toward the elderly and toward working with a multidisciplinary team. However, a 1993 survey of family practice residency graduates showed no association between improved training opportunities in geriatrics and graduates’ nursing home practice patterns. After multivariate analysis, working in a group family practice was the only predictor of active nursing home care.

We sought to assess predictors of current nursing home practice among graduates of a large Midwestern program.
family practice residency. We assessed physician demographic, practice, community, and educational variables. We hypothesized that making nursing home rounds with an attending physician during residency would be associated with current nursing home practice, compared with graduates who had made nursing home rounds without an attending physician during residency.

**Methods**

We performed a cross-sectional survey of all graduates of the University of Missouri-Columbia Family Practice Residency (n=201) as part of an ongoing evaluation of the residency that is done every 5 years. The survey included questions about nursing home practice patterns and nursing home training.

**Setting**

The Department of Family and Community Medicine at the University of Missouri-Columbia graduated its first class of residents in 1975. Family practice residents have seen patients in nursing homes since the program’s inception. Residents now see patients in proprietary and nonproprietary community nursing homes in Columbia or in one of two rural communities that serve as additional training sites.

Residents have been assigned six to eight patients to follow in a nursing home. These patients were usually not the resident’s “continuity patients” prior to nursing home admission.

Faculty supervision has varied from site to site and over time. Faculty members have either seen patients with residents in the nursing home or have been available by phone. Faculty members have included board-certified family physicians—a small number of whom have a Certificate of Added Qualifications in geriatric medicine—and geriatric or family nurse practitioners.

During the time period in which respondents to this survey completed their training, there was no formal geriatric curriculum within the residency apart from nursing home care. Except for having continuity clinics in different communities, all residents complete the same required rotations and have similar overall educational experiences.

**Questionnaire Development and Administration**

A questionnaire was developed and pilot tested on physician faculty. The instrument included questions about current and past nursing home practice, number of patients regularly seen, and whether graduates had rounded in the nursing home during residency with a faculty member or had rounded alone. Other questions asked about demographic information, including community size and type of current practice. The questionnaire also contained other items used to evaluate aspects of residency training not pertinent to this study.

The questionnaire was mailed to all graduates. There was one repeat mailing, and individuals who failed to respond after two mailings were contacted by phone.

**Data Analysis**

We compared physicians who had an active nursing home practice to physicians who did not. Physicians who responded affirmatively to the question, “Do you see patients in the nursing home on a regular basis?” comprised the active nursing home practice group. Although there is no standard definition of active nursing home practice, the two largest studies of physician nursing home practice also used this definition (ie, seeing nursing home patients on a regular basis).

For univariate analyses, we used independent samples t tests and Wilcoxon rank sum tests to compare means and chi-square to test difference in proportions. All tests of significance were two tailed. We then performed a forward step-wise logistic regression where active nursing home practice was the dependent variable. We included variables in the model that were associated with nursing home practice at a level of P<.2, plus items assumed a priori to be important. These included whether the physician maintained an active hospital practice, whether the physician was in his/her first practice after residency, practice type, community size, average number of outpatients seen per week, average number of hours worked per week, and whether the physician made nursing home rounds during residency with an attending physician. Statistics were performed using SPSS 10.0 for Windows®.

**Results**

The overall response rate was 86%. We excluded 27 respondents who were no longer active in family practice, since they would not be expected to participate in nursing home care. An additional three respondents did not respond to the questions regarding nursing home practice, and we considered them to be nonrespondents. Of the remaining 143 respondents, 55% were engaged in active nursing home practice.

The characteristics of University of Missouri-Columbia residency graduates and a comparison of those characteristics with those residency-trained members of the American Academy of Family Physicians are shown in Table 1. Compared to family physicians nationally, University of Missouri-Columbia graduates were younger, less likely to practice in a smaller community or be in solo practice, and more likely to practice in a multispecialty group.

Several demographic and practice characteristics were associated with nursing home practice. As shown in Figure 1, community size was inversely associated with the percentage of physicians with an active nursing home practice (P=.002). Physicians in the smallest communities (population <5,000) had a lower rate of
active nursing home practice (65%) than physicians in communities of 5,000 to 12,000 (80%); therefore, we combined these two categories for our analysis.

Table 2 shows the association of several other variables with nursing home practice. Physicians with an active nursing home practice worked more hours per week ($P<.001$), saw more outpatients per week ($P=.001$), and were more likely to have an active hospital practice ($P=.004$). Physicians in solo practice, partnership, or in a family practice group were more likely to see nursing home patients than physicians in multispecialty group practices ($P=.05$).

Making nursing home rounds with an attending during residency was only weakly associated with active nursing home practice. The relationship was not statistically significant ($P=.126$).

In a logistic regression model, community size, work hours, and having an active hospital practice predicted active nursing home practice. Physicians working in smaller communities were more likely to have a nursing home practice than were physicians in larger communities (OR=.67, 95% CI=.50–.89), as were physicians with an active hospital practice (OR=4.16, 95% CI=1.16–14.87). However, the regression model showed that taken together, these variables explained only a small portion of the variance in nursing home practice ($R^2=.12$). Increasing work hours were associated with an increased likelihood of nursing home practice (OR=1.05 for 1 hour of work increase, 95% CI=1.02–1.09).

Table 1

Demographic and Practice Characteristics

<table>
<thead>
<tr>
<th>MU Residency Graduates (Nursing Home Eligible)</th>
<th>National AAFP Data¹²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>39.8</td>
</tr>
<tr>
<td>Year of residency graduation (mean)</td>
<td>1986</td>
</tr>
<tr>
<td>Community size (%)</td>
<td></td>
</tr>
<tr>
<td>&lt;25,000</td>
<td>38.5</td>
</tr>
<tr>
<td>≥25,000</td>
<td>61.5</td>
</tr>
<tr>
<td>Practice type (%)</td>
<td></td>
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<tr>
<td>Solo</td>
<td>12</td>
</tr>
<tr>
<td>Partnership</td>
<td>13.5</td>
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<tr>
<td>Family practice group</td>
<td>42</td>
</tr>
<tr>
<td>Multispecialty group</td>
<td>32</td>
</tr>
<tr>
<td>Mean weekly outpatient visits</td>
<td>92</td>
</tr>
<tr>
<td>Mean work hours per week</td>
<td>54</td>
</tr>
</tbody>
</table>

MU—University of Missouri, Columbia
AAFP—American Academy of Family Physicians
NA—Not available

Figure 1

Proportion of Respondents With Nursing Home Practice, by Community Size

![Proportion of Respondents With Nursing Home Practice, by Community Size](image)
Discussion

We examined predictors of current nursing home practice. Contrary to our hypothesis, we found no significant association between exposure to an attending during nursing home rounds in residency and current activity in nursing home practice. This contrasts with the situation for obstetrics, in that previous research showed that exposure to faculty with a strong interest in obstetrics increased the likelihood of residency graduates including obstetrics as part of their practice.16 Perhaps some University of Missouri-Columbia family practice residency faculty were not enthusiastic about nursing home care or inadequately prepared to teach in this setting. Reuben et al have identified significant short-ages of adequately trained geriatric faculty in family practice and internal medicine residencies.9 Alternatively, other factors, such as community size, may play a more important role in physicians’ decisions to include nursing home care as part of their practice.

We did find that our subjects were more likely to have a nursing home practice if they practiced in smaller communities. This echoes findings of earlier studies.10,11,14 However, Katz found that community size had little effect.7 The difference between our study’s results and those of Katz’s study may be due to different definitions of community size and inclusion of multiple specialties in Katz’s study. Family physicians are more likely to practice in rural areas than are other physicians. Many family practice residencies have, or are developing, rural training tracks, and there are a growing number of fellowships preparing family physicians for rural practice. Educators involved in these programs should include adequate training for nursing home care, especially since rural physicians are likely to be called on to provide medical leadership for nursing homes in their communities. The nursing home curriculum should be a part of a comprehensive geriatric curriculum (such as one recommended by the Society of Teachers of Family Medicine, the Society of General Internal Medicine, and others17), include a longitudinal experience of at least 1 year’s duration, have specific educational objectives, and be taught by physician and nonphysician faculty in an attractive, quality nursing home.

Graduates caring for hospital inpatients and those working longer hours were also more likely to have a nursing home practice. Others have found a similar increase in frequency of nursing home practice among physicians working longer hours.7,11 Physicians who have an active nursing home practice may have a greater service commitment than those who do not. Although the univariate analysis showed a significant association between practice type and active nursing home practice, this relationship was not significant in the multivariable analysis. There may be an association between community size and practice type that accounts for this finding. Another survey, of graduates of the University of Maryland Family Practice Residency, found that graduates practicing in a group family practice were more likely to care for nursing home patients. Katz et al found that physicians in solo practice or in a partnership were more likely to care for nursing home patients than were physicians in group practices.7 As physicians seek to control working hours, and larger multispecialty practices become increasingly common, the number of physicians willing to provide care to nursing home patients may decline.

Limitations

Our study’s strengths include examination of an important outcome of residency training and high response rate. However, sampling graduates of a single residency limits generalizability. Further, exposure to an attending during nursing home rounds was based on self-report, and poor recall could have biased results. If this

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No Nursing Home Practice</th>
<th>Active Nursing Home Practice</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital practice</td>
<td>39.5 (60.5)</td>
<td>60.5 (62)</td>
<td>.004*</td>
</tr>
<tr>
<td>First practice after residency</td>
<td>38 (62)</td>
<td>62 (60.5)</td>
<td>.136*</td>
</tr>
<tr>
<td>Full-time academic practice</td>
<td>45 (55)</td>
<td>55 (60.5)</td>
<td>.97*</td>
</tr>
<tr>
<td>Practice type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family practice (solo, partnership, or group)</td>
<td>25 (43.2)</td>
<td>43.2 (60.5)</td>
<td>.05*</td>
</tr>
<tr>
<td>Multispecialty group</td>
<td>17.4 (14.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rounded in nursing home with attending during residency</td>
<td>37 (63)</td>
<td>63 (60.5)</td>
<td>.126*</td>
</tr>
<tr>
<td>Years after residency completion</td>
<td>9.6 (5.4)</td>
<td>10.4 (5.4)</td>
<td>.42**</td>
</tr>
<tr>
<td>Average number of outpatients per week</td>
<td>78 (46)</td>
<td>105 (46)</td>
<td>.001**</td>
</tr>
<tr>
<td>Average hours worked per week</td>
<td>49 (12.6)</td>
<td>57 (12.7)</td>
<td>&lt;.001**</td>
</tr>
</tbody>
</table>

SD—standard deviation
* Chi-square, df=1
** t test
occurred randomly, it would have decreased strength of association. Additionally, measuring nursing home training using one variable did not allow us to assess other important aspects of nursing home training that might affect a physician’s decision to care for nursing home patients, such as frequency of visits, number of patients, or the quality of the teaching nursing home.

Conclusions

Our results raise issues of concern to medical educators and policy makers interested in provision of medical care to nursing home residents. Though nursing home care may change in many ways, family physicians and general internists will undoubtedly be prominently involved in providing this care. It is essential that these physicians be prepared during training to provide high quality care in nursing homes.

Nonetheless, these results suggest that factors other than training are important to ensure an adequate cadre of physicians to care for our growing elderly nursing home population. These factors may include physician attitudes, community size, reimbursement, practice type, and proximity to the nursing home.\textsuperscript{5,7,10,18,19} Additional research is needed to determine which factors have the greatest effect on a physician’s decision to care for nursing home patients.

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REFERENCES