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How "Geriatric" is Care Provided by Fellowship-Trained Geriatricians Compared to that of Generalists?

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Abstract

Objectives—To determine whether outpatient care by fellowship-trained geriatricians is distinguishable from that of generalists caring for older patients.

Design—Observational study.

Setting—Three primary care clinics of an academic medical center.

Participants—Random sample of 140 adults aged 65 or older receiving primary care at one of the clinics.

Measurements—A medical chart review involving records of 69 patients receiving primary care from a fellowship-trained geriatrician and 71 patients receiving primary care from a generalist (general internal medicine or family practice) was conducted; information pertaining to two practice behaviors relevant to the care of older adults — avoidance of inappropriate prescribing and proactive assessments for geriatric syndromes — was abstracted.

Results—Geriatricians scored 17.6 out of a possible 24 points, on average; generalists, 14.2 ($P < .001$). Geriatricians scored higher than generalists on both prescribing and geriatric syndrome assessments. In a linear regression model adjusting for patient age and number of comorbidities

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and clustering by provider, provider specialty was strongly associated with overall score (β coefficient for specialty = 6.75, $P < .001$; 95% CI = 4.57–8.94).

Conclusion—The practice style of fellowship-trained geriatricians caring for older adults appears to differ from that of generalists, both with regard to prescribing behavior and assessment for geriatric syndromes.

Keywords

aged; health services for the aged/standards; physicians' practice patterns; ambulatory care/patterns; fee-for-service plans/standards; health services research; quality of health care; United States

Most medical care provided to elderly in the United States is delivered by generalist physicians trained in either family practice or internal medicine.¹ Given the projections for continued growth in size of the elderly population over the next several decades,² increased pressure on primary care practices to provide outpatient primary care for large numbers of older adults can be anticipated. Primary care specialties are well suited to care for the vast majority of elderly patients, provided that they can deliver effective care for general medical^{3·4·5} and geriatric conditions.^{6·7·8} Fundamentals of geriatric care include care continuity and coordination, pharmacologic management, and assessments for and evidence-based management of geriatric syndromes (e.g., falls, dementia).^{6·7·9} Recent evidence suggests that higher quality of care for general medical (e.g., hypertension, diabetes) conditions and geriatric conditions is associated with improved survival among community dwelling older adults.¹⁰

Few studies have examined the current quality of care for geriatric conditions. Those that have addressed this issue have shown that detection and care of geriatric syndromes by United States health care providers is less optimal than care for general medical conditions.^{7·8} These studies have involved two managed care organizations in the northeastern and southwestern United States, and thus the generalizability of findings to other health care delivery systems in other regions of the country is uncertain. Furthermore, prior studies have not addressed whether fellowship training in geriatric medicine has any relationship to quality of care for geriatric conditions. While one might assume that fellowship-trained geriatricians deliver higher quality care to older adults for geriatric conditions compared to providers with no formal fellowship training in care of the elderly, no empiric work has been done in this area. Thus, we sought to address this question. We focused on prescribing behavior and assessments for geriatric syndromes by providers working in a non-managed care environment and hypothesized that, due to their training in and practice of geriatric medicine, fellowship-trained geriatricians would be *less* likely to prescribe medications considered inappropriate for older adults¹¹ and *more* likely to assess their patients proactively for the presence of geriatric syndromes compared to generalist physicians without fellowship training in geriatric medicine.

METHODS

Participants

One hundred fifty patients were randomly selected from a computerized database of one academic medical center located in the Pacific Northwest of the United States, using two criteria: 1) aged sixty-five or older, 2) receiving primary care at one of the medical center's primary care (family medicine, general medicine, or geriatric medicine) clinics. This particular age group was selected because it constitutes a clearly defined (i.e., Medicare eligible) subset of primary care practice, and also because most prior descriptive studies of

health care quality of older adults are either derived from Medicare data or use this same age cut-off.^{7,12,13} All patients seen at this medical center are insured via fee-for-service (i.e., non-managed care) plans. For purposes of the analyses herein, we required that a patient have been followed by his/her designated primary care provider (PCP) for a continuous two-year period with at least two visits during the two-year time period. Ten of the initial one hundred fifty patients randomly selected for the study did not meet this criterion and so were excluded from our analyses. The selected start and stop dates for abstraction were January 1, 1999 and June 30, 2002. The study was approved by the institutional review board of the University of Washington.

Of the one hundred forty patients forming the study sample, sixty-nine were patients of the geriatric medicine clinic and had a fellowship-trained geriatrician as their PCP; seventy-one were patients of either the family medicine or general medicine clinic and had a generalist (family physician or general internist) as their PCP. Patients were identified as belonging to either the geriatrician group or the generalist group according to the departmental and divisional affiliation of their PCP. There were a total of eight (8) geriatricians and eleven (11) generalists in the study.

Data Collection

Medical records maintained as part of the medical center's electronic medical record system served as the data source for the chart abstraction. Dictated notes from each PCP visit were read completely for each patient. Only transcripts from outpatient visits for which the PCP's name appeared on the transcript were used. A ~10% subset (n = 15) of charts was abstracted by a second reviewer (E.A.P.) who was blinded to the scores of the primary reviewer (S.G.), to determine the proportion of agreement, which was 90%.

Inappropriate Medications—Medication prescribing was chosen as the first area of focus for this study because careful prescribing is a basic tenet of clinical geriatric medicine training, because there is a literature that serves to guide providers in choice of medications for older adults,¹¹ and because outpatient pharmacologic care has been shown to vary by a variety of factors, such as type of health care coverage and site of care.¹⁴ A list of potentially harmful (i.e., inappropriate) medications (see Appendix) for older adults was used to direct chart abstraction for this variable.¹¹ PCPs were accorded a maximum score of twelve points for prescribing according to geriatric principles – twelve points were accorded when no inappropriate medications were prescribed by the PCP *or* if the PCP discontinued all inappropriate medications that had been prescribed by another physician. However, when these types of medications were either prescribed or continued by the PCP, points were deducted. If only one inappropriate med were prescribed or continued by the PCP, the PCP was accorded eight points. If two inappropriate medications were prescribed or continued by the PCP, the PCP was accorded only four points. If three or more inappropriate medications were prescribed or continued by the PCP, no points were accorded (i.e., score was noted as zero).

Screening for Geriatric Syndromes—Because current guidelines addressing care of older adults endorse conducting assessments of older adults for the presence of geriatric syndromes,^{6,7} we chose to focus on care of such geriatric conditions as our second domain. Care was examined to determine whether assessments for the following geriatric syndromes were conducted: dementia, depression, falls, incontinence, insomnia, involuntary weight loss, hearing difficulty, and vision difficulty. Information was abstracted from both historical (i.e., progress notes) and exam (e.g., Snellen eye test) documentation. One and one-half points were awarded for screening for each of these syndromes for a maximum

score of twelve points. In the event that a particular syndrome was screened for multiple times, points were awarded only once.

Covariates—To examine the possibility that patients seen by geriatricians might be older and have a higher burden of chronic disease and perhaps see their PCP more often than patients of generalists, which in turn might increase the likelihood of prescribing more medications (some of which might be inappropriate) and permit completion of screening assessments for geriatric syndromes, patient age, number of visits to the PCP from January 1, 1999 to June 30, 2002, and number of comorbidities were abstracted from each patient's record. Comorbidities, abstracted from the automated problem list within the electronic health record, included atrial fibrillation, arthritis, bipolar illness, chronic obstructive pulmonary disease, congestive heart failure, coronary artery disease, dementia, depression, diabetes mellitus, hypertension, obesity, schizophrenia, seizure disorder, and valvular disease. These comorbidities were chosen because they appeared most frequently in the provider-generated problem lists for our study sample.

Data Analysis

Distributions of scores on high risk medication prescribing and geriatric syndrome care were evaluated to assure that assumptions of normality were met. Differences by specialty (geriatrician vs. generalist) in patient age, number of visits to PCP, and number of comorbidities were evaluated with t-tests. Total mean score, obtained by summing scores for prescribing and geriatric syndrome assessments together, was evaluated by specialty and inference testing accomplished via t-tests. For purposes of these analyses, stratum choice for each variable was determined based on variable distributions (see Table 1). Total mean score by specialty, stratified by patient age, visits to PCP, and comorbidities, was also compared. The association of specialty and total mean score was evaluated using linear regression and controlling for clustering by provider and for factors (age, number of comorbidities, both expressed as continuous variables for purposes of regression modeling) that differed by specialty in univariate analyses. An additional rationale for including number of comorbidities in regression models was recent data demonstrating that higher quality of care is associated with greater mean number of comorbid conditions.^{15,16}

RESULTS

The eight geriatricians in our sample had an average of 8.6 patients per provider; the 11 generalists had an average of 6.5 patients per provider.

Differences by provider specialty in patient age, number of visits to PCP, and number of comorbidities are shown in Table 1. As a group, the patients of geriatricians were older and had more comorbidities. There was no significant difference by provider specialty in mean number of visits.

Geriatricians had a higher total mean score out of a possible 24 points (17.6 for geriatricians vs. 14.2 for generalists, $P < .001$). On average, geriatricians scored higher than generalists on avoiding inappropriate medications (11.8 vs. 10.7, $P = .004$) and screening for geriatric syndromes (5.8 vs. 3.5, $P < .001$). In linear regression models examining predictors of score for each domain, patient age was not a predictor of score in either domain; provider specialty predicted scores for both domains (data not shown).

We were interested in whether, since geriatricians were seeing older, sicker patients this might make it easier to obtain a higher score. Thus, we repeated our analysis of the total mean score by provider specialty, stratifying on category of patient age, number of visits over the period of observation, and number of comorbidities (Table 2). We chose to look by

category of each of these factors in order to make these data clinically relevant. These data show that geriatricians scored higher than generalists, regardless of whether the patients were relatively younger or older in age. Providers of both specialties scored higher when given more “opportunities” (i.e., more visits) in which to deliver care. However, geriatricians scored higher than generalists, regardless of whether patients had relatively fewer or more visits. Geriatricians scored higher than generalists, regardless of whether patients had relatively fewer or more comorbidities. In a linear regression model examining the relationship of provider specialty to total score and adjusting for patient age and number of comorbidities and clustering by provider, provider specialty was strongly associated with overall score (β coefficient for specialty = 6.75, $P < .001$; 95% CI = 4.57–8.94).

DISCUSSION

Fellowship-trained geriatricians were compared with generalists on two practice behaviors that were hypothesized to differ based on clinical training. As hypothesized, geriatricians had a higher total score, on average, than generalists, and scored higher on each of the two aspects of practice that we assessed. This pattern persisted in stratified analyses accounting for the older age and higher burden of chronic illness among patients of geriatricians. Provider specialty was associated with total mean score in multivariate analysis.

While our evaluation of geriatricians and generalists showed statistically significant differences in the extent to which the two groups incorporated geriatric principles into their practice, it is uncertain whether this degree of difference is meaningful clinically. Of interest, the average score on each domain did not differ to a great extent by specialty in our particular practice setting. It is possible that the presence of clinically active, fellowship-trained geriatricians influenced the care provided by generalists in this particular environment. Whether such small differences would also occur outside of an academic practice setting or in an environment where fellowship trained geriatricians were not practicing is uncertain.

We examined two domains relevant to primary care of community dwelling older adults: appropriateness of prescribing and proactive assessments for geriatric syndromes. Others have examined quality of care for specific conditions that occur commonly among older adults, including osteoarthritis,¹⁷ falls,¹⁸ persistent pain,¹⁹ and urinary incontinence.²⁰ These previous studies involved patients and providers from managed care organizations, whereas the present study involved patients and providers from an academic (university) health care environment. Prior studies focused on whether particular, condition-specific aspects of care were delivered, using quality indicators for each condition. By contrast, we focused on variations in care by providers of differing specialty training in two specific domains relevant to the care of older adults.

It was beyond the scope of the present study to address whether care quality had any relationship to survival or other relevant outcomes, such as functional status or quality of life. However, others have shown that better quality care provided for both general medical as well as geriatric conditions is associated with enhanced survival among older adults.¹⁰

Limitations of this study include the use of medical records for the assessment of practice behavior. By using medical records, we made the assumption that all discourse that occurs in visits is entered into the records; it is possible that some screening for geriatric syndromes may have occurred but not have been documented. Additionally, the fact that all providers of each specialty practiced in a single clinic at an academic medical center, and were limited in number, limits the external validity of our findings. Further study with larger numbers of providers of each specialty and from a variety of practice settings may be warranted. A

larger provider sample would also permit other comparisons of potential interest — for example, comparisons by *type* of generalist, that is, internists compared to family practitioners — that were not the primary focus of the present study. Additionally, we were not able to evaluate the potential confounding that may have resulted from differing staff roles in conducting screening assessments for geriatric syndromes at each clinic, as this information was not available in the medical record. It is certainly conceivable that an alternative explanation for our findings of more geriatrically oriented care being provided by geriatricians compared to generalists — that is, other than the obvious explanation of differences in training — may be that geriatricians may have relied more heavily on clinic staff for conducting screening assessments for some syndromes, thus permitting more of these to occur by virtue of not relying on the provider/patient visit as the only form of interaction with patients. Another potential confounder for which we were unable to control was visit duration, as duration nested in specialty in this particular health care setting. Additionally, this study did not examine quality of care for general medical conditions (e.g., hypertension, diabetes) or routine preventive care (e.g., influenza vaccination, mammography) and so does not elucidate any differences that may have been present by specialty with regard to these health issues. Finally, the generalizability of our findings to environments other than academic settings and to elders insured by non fee-for-service plans is unknown, as all patients included in this study were cared for in academic medical practices and insured via fee-for-service (i.e., non-managed care) plans.

These limitations notwithstanding, our study has several strengths, including a well-defined, randomly selected sample of patients from each clinic, a thorough chart review covering a relatively long time window (i.e., 3.5 years) for observation of provider practice that permitted us to observe any sequential discontinuation of medications and account for any seasonal variations in practice, and re-abstraction of a percentage of records to ensure agreement across different abstractors. Perhaps most importantly, this may be the first examination of quality of care for geriatric conditions outside of a managed care setting and in addition, the first study to report variations in care for geriatric conditions in relation to provider specialty training. The findings provide support for recommendations from the Institute of Medicine to enhance the education and training of the entire health care work force with respect to the full spectrum of health needs of older persons.²¹

In summary, quality of care for geriatric conditions appears to vary by provider specialty in an academic practice environment, although absolute differences are fairly small. Extension of this work into other practice settings may be warranted.

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Appendix

Potentially inappropriate medications.

Antiemetics	Prochlorperazine
	Promethazine
	Timethobenzamide
Antihistamines	Diphenhydramine
	Hydroxyzine
Antihypertensives	Methyldopa
	Reserpine
Barbiturates	Butabarbital
	Mephobarbital
	Pentobarbital
	Secobarbital

Antiplatelet agents	Dipyridamole
Anxiolytic/hypnotics	Chloral hydrate
	Meprobamate
Muscle relaxants	Methocarbamol
	Carisoprodol
	Cyclobenzaprine
	Orphenadrine
Narcotics	Meperidine
	Propoxyphene
	Pentazocine
	Tramadol
NSAID's	Indomethacin
	Phenylbutazone
Tricyclic antidepressants	Amitriptyline
	Clomipramine
	Desipramine
	Doxepin
	Trimipramine
	Protriptyline
	Amoxapine
	Maprotiline
	Diazepam
Benzodiazepines	Flurazepam
	Clonazepam
	Chlordiazepoxide
	Clorazepate
	Alprazolam
	Oxazepam
	Triazolam

Table 1

Comparison of Patients of Geriatricians and Generalists on Age, Number of Clinic Visits, and Number of Comorbidities

	Geriatricians' Patients (N = 69)	Generalists' Patients (N = 71)	P-value
Age, mean $\pm$ SD	78.8 $\pm$ 7.4	75.1 $\pm$ 5.7	.001
Visits, number, mean $\pm$ SD*	12.4 $\pm$ 6.4	13.3 $\pm$ 7.5	.432
Comorbidities, number, mean $\pm$ SD	3.7 $\pm$ 1.7	2.9 $\pm$ 1.5	.009

* Number of visits over 3.5 years of observation (January 1, 1999 to June 30, 2002).

Table 2

Comparison of Total Mean Score across Domains of Geriatric Syndrome Assessments and High Risk Medication Prescribing According to Provider Specialty and by Strata of Age, Number of Clinic Visits, and Number of Comorbidities

	Mean Score $\pm$ SD (N) on Geriatric Practice Measure		
	Geriatricians	Generalists	<i>P</i> -value
Age, years			
65–74	18.2 $\pm$ 2.3 (16)	14.1 $\pm$ 2.8 (41)	<.001
75+	17.4 $\pm$ 3.0 (53)	14.4 $\pm$ 3.7 (30)	.001
Visits, number			
≤ 6	15.5 $\pm$ 2.0 (10)	14.0 $\pm$ 1.7 (16)	.048
>6	17.9 $\pm$ 2.9 (59)	14.3 $\pm$ 3.5 (55)	<.001
Comorbidities, number			
≤ 3	17.1 $\pm$ 2.5 (30)	14.4 $\pm$ 3.1 (50)	<.001
>3	18.0 $\pm$ 3.1 (39)	13.9 $\pm$ 3.5 (21)	<.001