Follow-Up Of Comprehensive Geriatric Assessment In A Family Medicine Residency Clinic

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Background: **The objective of this study was to evaluate the effect of outpatient geriatric consultation by referring academic physicians and to verify the results of a previous study.**

Methods: **We conducted a retrospective review of charts of 37 patients referred for geriatric consultation during a 7-month period of a university- and community-hospital-affiliated family practice residency clinic in urban northeast Washington, DC. The consultation involved team assessment, which led to formal recommendations to the attending physician. Main outcome measures included total number and category of recommendations made, as well as a total number and category of recommendations adhered to by referring physicians.**

Results: **There were 29 women and 8 men with an average age of 79.1 years; 5 were white and 32 were African-American. For the 23 patients for whom follow-up could be determined, the mean number of total diagnoses per patient was 11.4 (SD 3.5). The mean total number of recommendations made per patient was 18.1 (SD 5.9). The mean total number of recommendations acted upon per patient by referring physicians was 9.5 (SD 4.4). The recommendations fell into the following categories: rehabilitative 64 percent, radiologic 57.1 percent, laboratory 56.9 percent, total medication 55.6 percent, medical 50 percent, health maintenance 47.1 percent, social service 46.2 percent, sensory 33 percent, other 28.6 percent, educational 20 percent, and nutritional 14.3 percent.**

Conclusions: **Multidisciplinary geriatric assessment in an academic outpatient setting provides a comprehensive assessment for faculty and resident physicians in training. Recommendations will be adhered to only 50 to 70 percent of the time, possibly because of the demographic and socioeconomic mix and overall health of the patient population, health care priorities of the referring physician, and costs and availability of various interventions. Physicians in training should be exposed through continuing medical education to various aspects of geriatric assessment. (J Am Board Fam Pract 1995; 8:263-9.)**

Evaluation of the health status of elderly patients in the private office setting can be frustrating and futile for the primary care physician. Recognized impediments include the time consumed by the physician or staff in performing the examination, patient perceptions that functional testing is unimportant, and perceived problems with reimbursement by Medicare. In many academic geriatric training centers, however, geriatric assessment has evolved to provide a model of comprehensive health evaluation of the elderly outpatient population. The assessment team typically includes a nurse, a physician, and a social worker.[1,2] A complete geriatric assessment includes a thorough history and physical examination, an objective functional scale assessment similar to that used by Katz,[3] a Mini-Mental Status determination,[4] an evaluation of mood using a geriatric or other depression scale,[5] and a review of nutritional status using the scale recommended by the national Nutritional Risk Initiative.*

The outcomes of various clinical trials of geriatric outpatient assessment have been mixed. Positive outcomes include a decreased length of hospital stay and hospital costs at 1-year follow-up[6]; a small benefit in cognitive functioning at short-term follow-up (3 months), which was not sustained at 1-year follow-up[7]; significantly less decline in functional status[8]; and an increased use of social and ambulatory health care services.[9] Neu-

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*The Nutritional Risk Initiative is a 1-page scoring instrument sponsored by the American Academy of Family Physicians, the American Dietetic Association, and the National Council on Aging under a project entitled National Screening Initiative and co-sponsored by Ross Laboratories, Washington, DC.

tral or negative outcomes include no differences in psychosocial dimensions of health (life satisfaction, depression, self-rated health, or affect),[8] a significantly higher mortality rate for the assessment patients ($P=0.10$),[8] no differences in measures of health status,[7] and no difference in caregiver satisfaction.[6] Geriatric assessment seems to be most useful for a frail subgroup of elderly patients who do show improvements in health status at follow-up.

Comprehensive geriatric assessment can be an excellent educational experience in the training of primary care residents. Even though geriatric assessment is usually performed in academic settings, all of the previously mentioned studies describe comprehensive outpatient geriatric assessment in nonresidency clinic settings. We were interested in the effect of comprehensive geriatric assessment by resident and faculty physicians in a family practice residency clinic and the total number and type of recommendations taken by attending physicians. Specifically, we were interested in verifying the results of a previous study performed by Reed, et al.[10] from the University of Arizona Department of Community and Family Medicine.

Methods

We undertook a retrospective review of all the comprehensive geriatric patient assessments for the period from 1 September 1992 (the date of implementation) to 30 March 1993. The university Family Medicine Residency Program is affiliated with a community hospital in urban northeast Washington, DC, and the geriatric clinic is located in the model family practice setting several miles from the hospital. The clinic is directed by a board-certified family physician who has training in geriatrics; a nurse, a medical social worker, a pharmacist from nearby Howard University College of Pharmacy, a rehabilitation specialist from the affiliated hospital, a 3rd-year resident assigned to the geriatric service for the month, and occasionally, a 4th-year medical student complete the team. The assessment clinic is held one afternoon each week and can accommodate a maximum of 2 patients. Patients, who are seen only once in this specialized geriatric session, are referred by resident, faculty, or private attending physicians for such problems as frequent falling, functional decline, multiple medical problems, cognitive dysfunction, incontinence, polypharmacy, or psychosocial disposition.

After the initial nursing examination, the social worker conducts a psychosocial interview. An evaluation by the physician team member then follows, which includes a comprehensive history and physical examination and accessory tests, including a functional scale, a geriatric depression scale (short form), a Folstein Mini-Mental Status examination, nutritional risk evaluation, and a Caregiver Burden scale,[8] when applicable. The team then meets privately to discuss the case and to decide upon recommendations for the referring physicians to consider. Although no recommended treatments are actually instituted at the geriatric assessment visit, the team does review its findings and recommendations with the patients or caretakers. Thus, the geriatric team's function is consultative only. The patients or caregivers are given a timely follow-up appointment with their primary referring physicians. A written consultation is sent to the referring physicians and to the team members for documentation. The referring physicians then review the recommendations at their next office visit with their patient and implement geriatric recommendations at their discretion.

Our study used data gathered at these assessment visits. Demographic information, including age, sex, race, and educational level, was determined from a medical record review. Patients were categorized according to the referral source, whether follow-up was recommended, and the resident's year in training. Six activities of daily living (ADLs — dressing, bathing, mobility, eating, toileting, and grooming) were rated individually on a scale ranging from 3 (independence) to 1 (dependence), and composite activities of daily living scale scores ranged from 18 (complete independence) to 6 (complete dependence). Scores on the geriatric depression scale (short form) ranged from 0 to 15, with a score of 5 or more indicative of depression. The Mini-Mental Status test is scored from 0 to 30, with a score of 24 or less suggestive of cognitive dysfunction. The nutritional risk index ranges from 0 to 8, with 0 to 2 indicative of low risk, 3 to 5 of moderate risk, and 6 to 8 of high risk. The Caregiver Burden scale ranges from minimum of 0 to a maximum of 60.[8]

From each patient's medical record we then recorded the number of follow-up visits, the

number of prescription and over-the-counter medications, the reasons for referral, total number of diagnoses per patient (inactive and active), and the number of diagnoses associated with the following areas: cardiovascular system, respiratory tract, gastrointestinal tract, (including a family history of gastrointestinal cancer, previous gastrointestinal cancer or polyps, or previous colectomy); arthritic, genitourinary tract, endocrine system, mental health, neurological system, blood and blood-borne diseases (including positive test for syphilis, positive purified protein derivative [PPD] skin test, history of tuberculosis); psychosocial problems (including fear of falling); sensory problems (including dental problems); and geriatric (fatigue, disequilibrium, falls, incontinence of feces or urine, anorexia, malnutrition, weight loss, dementia or memory loss, postural hypotension, syncope, polypharmacy).

The total number of recommendations given per patient was recorded, with each recommendation being assigned to one of 11 categories (Table 1). Medical records of patients attending the geriatric assessment clinic who had at least one follow-up visit recorded were reviewed for total number and category of recommendations pursued by the attending physician.

Results

A total of 37 patients were seen for geriatric assessment during the 7-month period. The average age was 79.1 years (SD 9.5 years); 5 patients were white, 32 were African-American, and 29 were women. The patients were referred for geriatric assessment in four ways: (1) 12 (32.4 percent) patients were referred by a social service agency, by a family member, or by the hospital and had not previously received medical care at the family practice site; (2) 3 (8.1 percent) patients were referred by their outside private physicians; (3) 19 (51.4 percent) patients were referred to the clinic by their family medicine resident physician; and (4) 3 (8.1 percent) patients were referred by their regular family medicine faculty physician. Reasons for referral included multiple medical problems (18 patients or 48.6 percent), memory loss (7 patients or 18.9 percent), psychosocial problems (6 patients or 16.2 percent), falls (3 patients or 8.1 percent), urinary continence (2 patients or 5.4 percent), and malnutrition (1 patient or 2.7 percent).

Table 1. Categories of Recommendations Made for Patients Attending a Geriatric Clinic.

Category	Type of Recommendation
Rehabilitative	Physical, speech, occupational therapy; assistive devices
Radiologic	Lumbosacral radiographs, chest radiographs, computerized tomographic scan of the head or other body part
Laboratory	Electrocardiogram, urinalysis, urine culture and sensitivity, postvoiding residual determination, chemistry profile, B^{12} and folic acid levels, lanoxin, other therapeutic drug level, potassium level, thyroid-stimulating factor and free thyroxine levels, tuberculin skin testing, syphilis testing, spirometry, stool for occult blood testing
Prescription and over-the-counter medications	Bulk agents, stool softeners, acetaminophen, aspirin, vitamins
Medical	Referral for cardiac work-up, echocardiography, or holter monitoring; podiatric consultation, hematuria, colonoscopy, cardiac stress testing
Health maintenance	Influenza and pneumococcal vaccine, diphtheria-tetanus immunization, mammogram, Papanicolaou smear, discussion of code status, colonoscopy screening
Social service	Referrals for financial assistance and health insurance, home care personnel, adult day care, durable medical equipment, nursing home placement, senior citizens agency
Sensory	Ophthalmologic, hearing, or dental evaluation
Other	Stockings, adult protective garments, monitoring weight
Educational	Counseling regarding restriction or encouragement of fluids, postural instructions, diabetic foot care, exercise, bladder exercises
Nutritional	Restricted or liberalized sodium intake, diabetic diet instructions, supplements

It was possible to evaluate follow-up care of 23 patients seen by faculty and resident physicians. These patients were cared for by faculty, and the 20 patients cared for by residents were equally divided between 3rd- and 2nd-year residents. Demographic and other variables for these patients are displayed in Table 2, the average total and type of diagnoses per patient are displayed in Table 3, the average total number and type of recommendations per patient are displayed in Table 4, and the average total number and type of recommendations acted upon per physician are listed in Table 5.

Table 2. Demographic and Other Characteristics of Follow-up Geriatric Assessment Patients (n = 23).

Characteristic	Average	SD	Range
Age (years)	78.6	9.0	66–92
Educational level (grade)	8.8	3.4	0–16
Functional level	16.2	1.4	13–18
Mini-Mental Status score	23.4	6.9	10–30
Caregiver Burden score	16.8	8.6	8–26
Depression score	4.1	2.1	0–10
Number of follow-up visits	3.5	1.8	1–7
	No. (%)		
Race			
White	2 (8.6)		
African-American	21 (91.4)		
Sex			
Men	4 (17.4)		
Women	19 (82.6)		

The average total percentage of recommendations acted upon, by category, in order of frequency was 64 percent rehabilitative, 57.1 percent radiologic, 56.9 percent laboratory, 55.6 percent total medication, 50 percent medical, 47.1 percent health maintenance, 46.2 percent social service, 33 percent sensory, 28.6 percent other, 20 percent educational, and 14.6 percent nutritional (Table 5).

Table 6 displays the frequency and type of recommendations followed by referring physicians. The most frequent rehabilitative recommendation carried out was for physical therapy, followed by assistive devices, whereas the least was for speech and occupational therapy. The most common radiologic recommendation acted upon was for a chest radiograph, whereas the least common was for computerized tomographic (CT) head scanning as part of a dementia work-up. The most common laboratory recommendation followed was for yearly thyroid-stimulating hormone (TSH) or free thyroxine (T_4) screening and vitamin B_{12} and folic acid levels to assess for cognitive dysfunction. The least common laboratory test performed was a postvoiding residual urine determination for office incontinence evaluation.

Most prescription medication recommendations made and acted upon involved deletions, followed by substitutions. The most common deletion was a nonsteroidal anti-inflammatory drug for arthritis or pain. The most common substitution involved drugs used for the treatment of hypertension (discontinuing thiazide diuretics, centrally acting drugs, and β-blockers and substituting angiotensin converting enzyme inhibitors and calcium channel blockers). The most common prescription medication addition recommendation followed was to add an antidepressant for the treatment of depression. The most recommended over-the-counter medications were nonstimulating stool softeners, multiple vitamins, aspirin, acetaminophen, and bulk laxatives. The most common over-the-counter medication recommendations acted upon included acetaminophen rather than nonsteroidal anti-inflammatory pain medications for the relief of pain, aspirin for prophylaxis of stroke or myocardial infarction, and multiple vitamins.

The most common medical recommendation acted upon was referral for cardiac work-up, and the least common was podiatric referral for foot problems. The most common health maintenance recommendation followed was for influenza and pneumonia prevention, whereas the least common was for Papanicolaou smear and screening mammogram. The most commonly accepted social service recommendation was referral for financial assistance or home care, whereas the least common was referral for increased socialization to senior service agencies or

Table 3. Number of Diagnoses of Geriatric Assessment Patients (n = 23) by Category.

Category	Total No. (%)	Average Number	SD	Range
Geriatric	45 (17.4)	2.0	1.6	0–6
Cardiovascular	40 (15.4)	1.7	1.0	0–4
Sensory	26 (10)	1.1	0.7	0–3
Mental health	26 (10)	1.1	0.7	0–3
Gastrointestinal	23 (8.8)	1.0	0.7	0–3
Arthritic	21 (8.1)	0.9	0.7	0–3
Endocrine	20 (7.7)	0.9	0.7	0–3
Blood and blood borne	19 (7.3)	0.8	0.8	0–4
Psychosocial	12 (4.6)	0.5	0.5	0–2
Genitourinary	12 (4.6)	1.5	0.7	0–3
Neurologic	9 (3.5)	0.4	0.7	0–3
Respiratory	6 (2.3)	0.26	0.4	0–2
Total	259 (100)	11.4	3.5	6–24

Table 4. Numbers of Recommendations Made for Geriatric Assessment Patients by Category.

Category	Total No. (%)	Average Number	SD	Range
Health maintenance	102 (23.8)	4.6	1.6	1–7
Prescription medications	75 (17.5)	3.4	2.0	0–9
Laboratory	58 (13.6)	2.6	1.5	0–6
Over-the-counter medications	42 (9.8)	2.1	1.2	0–5
Educational	30 (7.0)	1.9	1.0	0–4
Social service	26 (6.1)	1.6	0.7	0–3
Rehabilitative	25 (5.8)	2.5	1.8	0–7
Sensory	24 (5.6)	1.2	0.4	0–2
Medical	18 (4.2)	1.6	0.7	0–3
Radiologic	14 (3.3)	1.2	0.4	0–2
Nutritional	7 (1.6)	1.4	0.6	0–2
Other	7 (1.6)	1.0	0.0	0–1
Total	428 (100)	18.6	5.9	8–27

adult day care. The most common sensory recommendation pursued was for screening ophthalmologic referral, whereas the least common was for dental referral. The most common educational recommendation acted upon was for diabetic foot instructions, whereas the least common was for bladder exercises for urinary incontinence management. The most common nutritional recommendation acted upon was a change in diet, whereas the least common was nutritional supplements. The most common "other" recommendation acted upon was for pressure stockings, whereas the least common was to monitor weight.

The percentages of total number of recommendations carried out per patient by number of follow-up visits were 36 percent, 1 follow-up visit; 44 percent, 2 follow-up visits; 58 percent, 3 follow-up visits; 64 percent, 4 follow-up visits; 63 percent, 5 follow-up visits; 50 percent, 6 follow-up visits; and 55 percent, 7 follow-up visits.

Discussion

The results of our study differ from those of Reed, et al.[10] at the University of Arizona in that 69.1 percent of the total recommendations were acted upon in their study compared with 48.6 percent in our study. Demographic, socioeconomic, and health differences that existed between the two study groups could have affected study results, as well as differences in follow-up time. The geriatric assessment teams also differed between the two studies, with our assessment team having fewer members, which could have had a major effect on outcome.

Compared with the Reed, et al. study, our study had more African-Americans (86 percent versus 22 percent) and more diagnoses per patient (11 versus 5.7). The higher number of diagnoses in our study could have been due to the way in which they were classified by our team or to under- or over-reporting by the caregiver, patient, or physician. The source of referral might also have been responsible for this finding, as all of the patients in the Reed, et al. study were self-referred and then cared for by the resident physician assigned to the geriatric clinic. In our study all 23 patients seen for follow-up were referred by their physicians for geriatric assessment, which could account for more known medical conditions. Physician referral could also account for the higher percentage of patients in our study who had sensory, cardiovascular, and especially geriatric conditions, even though the two schemes for classifying diagnoses were different.

Our average depression score of 4 on a scale of 1 to 15 for which 5 is suggestive of depression could be related to the overall poorer health of our patients; numerous studies have found a high correlation between depression and physical illness in the elderly.[11] Our study did not allow for measurement of quality-of-life issues, which should be addressed in future studies of this type.

The small number of nutritional recommendations pursued could have been the result of not having a nutritionist as a team member to make the recommendation. The small number of recommendations acted on for incontinence work-up, determination of code status, and dental evaluation could have been the result of time constraints in a routine office visit. The small number of recommendations followed for nutrition, education, speech and occupational therapies, antidepressant therapy, and code status determination could have been because a higher priority was given to other problems. The small number of recommendations carried out regarding nutrition, speech and occupational therapies, incontinence, medication appropriateness, antidepressant therapy, code status determination, Papanicolaou smear and mammography, dental

Table 5. Number of Geriatric Assessment Team Recommendations Adhered to by Referring Physicians.

Category	Adhered to No. (%)	Made	Average Number	SD	Range
Rehabilitative	16 (64.0)	25	2.3	2.2	0–7
Radiologic	8 (57.1)	14	1.1	0.4	0–2
Laboratory	33 (56.9)	58	1.9	0.9	0–4
Total medications	65 (55.6)	117	3.4	1.7	2–7
Medical	9 (50.0)	18	1.3	0.5	0–2
Health maintenance	48 (47.1)	102	2.5	1.4	0–5
Social service	12 (46.2)	26	1.3	0.5	0–2
Sensory	8 (33.0)	24	1.0	0.0	0–1
Other	2 (28.6)	7	1.0	0.0	0–1
Educational	6 (20.0)	30	1.2	0.5	0–2
Nutritional	1 (14.3)	7	1.0	0.0	0–1

evaluation, and evaluation of psychosocial issues could have been because the referring physicians needed education about the importance of these issues.

In all fairness to the referring physicians, the frequency with which some recommendations were pursued could have reflected the attending physician's perception of the recommendation as being easy to perform, practical, or acceptable to the patient, such as laboratory work-up for dementia, ophthalmology screening, health maintenance immunizations, and referral for financial assistance and in-home support. Recommendations that were rejected could have been perceived to be difficult to perform in the clinic or were impractical or rejected by the patient, such as CT scanning of the head or screening Papanicolaou smear and mammography. Lack of interest in obtaining a Papanicolaou smear or mammogram might also reflect ageism among physicians in general[12] or some confusion among physicians about the current recommended guidelines among various medical and government agencies for performing these screening tests. Recommendations could also have been rejected because of the cost or availability of tests or services as perceived by the attending physician or patient.

Two final points are also worth mentioning. First, the results of our study could be of value to family medicine educators, but developing a geriatric assessment team would probably not be practical in a private practice because of the cost, extra paperwork, and time involved in administering such a program, espe-

Table 6. Frequency and Type of Recommendations Followed by Referring Physicians, by Category.

Category	Most Common	Least Common
Rehabilitative	Physical therapy	Speech and occupational therapy
Radiologic	Chest radiograph	Computed tomographic scan of head
Laboratory	Screening TSH and free T_4 or with folic acid and B_{12} levels for laboratory dementia work-up	Postvoiding residual urine
Prescription medications (substitution)	Discontinue thiazide diuretics, central-acting drugs, β-blockers; use angiotensin converting enzyme inhibitors and calcium channel blocking agents	
Prescription medications (deletion)	Discontinue nonsteroidal anti-inflammatory for arthritis and pain	
Prescription medications (addition)	Add an antidepressant	
Over-the-counter medication	Acetaminophen for pain, aspirin for stroke or myocardial infarction prophylaxis, and multivitamin	
Medical	Referral for cardiac work-up	Podiatric referral
Health maintenance	Influenza and pneumococcal vaccine	Papanicolaou smear and mammogram
Social service	Referral for financial assistance, home care referral for in-home support	Increased socialization to senior service agencies or adult day care
Sensory	Ophthalmologic examination	Dental referral
Other	Stockings	Monitor weight
Educational	Diabetic foot care	Bladder exercises
Nutrional	Change in diet	Add supplement

TSH–thyroid-stimulating hormone, T_4–thyroxine.

cially regarding Medicare reimbursement. Nevertheless, computer software programs are being tested that might eliminate the drudgery of the paperwork and the need for extra personnel. In the meantime, current public policy efforts should be directed toward changing the reimbursement codes for geriatric outpatient visits and implementing a comprehensive geriatric assessment code by third-party payers so primary care physicians can be adequately compensated for the time needed to care for the elderly.

Second, this study was performed in a setting in which the assessment team was familiar with community resources. The effectiveness of any assessment team will depend on how familiar the team and attending physician are with community resources so they can make realistic recommendations, especially when considering availability, cost, and accessibility of these resources.

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