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Development and Implementation of a Proactive Geriatrics Consultation Model in Collaboration with Hospitalists

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Abstract

Acutely ill hospitalized older adults often experience a decline in function that may be preventable using a proactive, interdisciplinary, patient-centered approach. Hospitalists are treating an increasing number of these patients. A collaborative geriatrics consultation model to prevent functional decline and improve care for older patients with geriatrics syndromes was developed and implemented in partnership with a large hospitalist group in a community teaching hospital. A team of a geriatrician and a geriatrics nurse practitioner led the new consultation service. The team assisted with identifying cases, provided consultation early in the hospital stay, focused its evaluation on functional and psychosocial issues, and assisted in clinical management to optimize implementation of recommendations. In the first 4 years, the consultation service conducted 1,538 consultations in patients with a mean age of 81 (range 56–103). The most frequent geriatrics diagnoses were gait instability, delirium, and depression; recommendations usually included consulting physical therapy, increasing activity, and changing medications. The number of referrals and referring physicians grew steadily each year. Twenty-eight of 34 (82%) of the referring hospitalists completed a Web-based satisfaction questionnaire. All responding hospitalists agreed that proactive geriatrics consultation helped them provide better care; 96% rated the service as excellent. Analysis of hospital administrative data revealed a lower length of stay index and lower hospital costs in patients receiving a geriatrics consultation. The Proactive Geriatrics Consultation Service represents a promising model of collaboration between hospitalists and geriatricians for improving care of hospitalized older adults.

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Keywords

hospital care; geriatric consultation; hospitalists; interdisciplinary team; nurse practitioner

Patients aged 65 and older account for more than 30% of all hospital discharges and approximately 50% of hospital days.¹⁻³ Thirty-five percent of older patients admitted to a hospital for an acute illness experience decline in function, often leading to prolonged hospitalization or admission to an extended-care facility.⁴⁻⁷ In addition, studies have shown that decline in function may be preventable.^{5,6,8} Inpatient geriatrics care has tended to occur in the setting of geriatrics consultation or primary geriatrics units. Clinical trials of inpatient geriatrics consultation services have produced conflicting results, whereas inpatient geriatrics units specifically designed for preventing functional decline have provided benefits.^{9,10} Results of non-unit-based consultation models (Table 1) vary depending on patient selection and outcomes measured. Overall, findings suggest that targeting high-risk patients and controlling implementation of recommendations may yield greater benefit.¹¹⁻¹⁸

Hospitalists, few of whom have received advanced training in geriatric medicine, treat an increasing number of hospitalized older patients in the United States.¹⁹ A recent analysis demonstrated that the odds that a hospitalist treated a hospitalized Medicare patient increased 29% per year from 1997 through 2006.²⁰ The number of hospitalists nationwide grew from approximately 350 in 1995 to more than 20,000 in 2008.²¹ Little has been reported regarding interaction and collaboration between hospitalists and geriatricians.¹⁹

To prevent functional decline and improve the care of older patients with geriatric syndromes, a proactive geriatrics consultation service was implemented in collaboration with hospitalists. Instead of providing geriatric consultation from a large team, as done in previous studies, a service consisting of a geriatrician and nurse practitioner (NP) who worked closely with hospitalists to preserve function of older patients in the hospital and minimize discharges to nursing homes was created. Building on lessons learned from prior studies of inpatient geriatrics consultation models, the model targets patients at risk of functional decline and provides a geriatrics team that implements focused recommendations for hospital care and disposition. This article describes the approach and experience in the development and implementation of the consultation service in its first 4 years.

PROGRAM DEVELOPMENT

Innovative Aspects of the Program

Compared with previously reported models of inpatient geriatric consultation, unique features of the proactive geriatrics consultation model are that patients at greatest risk for functional decline are proactively targeted for consultation, early involvement of the geriatrics consultation team is emphasized, and daily follow-up and implementation of recommendations are provided. The new service is also unique in its deliberate collaboration with hospitalists, who are quickly becoming the dominant provider of inpatient care in many hospitals.

Collaboration with Hospitalists

A large hospitalist group in a 750-bed community teaching hospital was partnered with in the development of the new collaborative model aimed at improving the quality and outcomes of care for older inpatients. The geriatrician and medical director for the hospital's Senior Health program applied the "ABCs" (Agree, Build, Commence, Document, Evaluate, Feedback, Grow) of new inpatient geriatrics program development and implementation.^{22,23} Meetings were held with the director and "opinion leaders" of the hospitalist group. The geriatrician introduced the proactive geriatrics consultation concept of care and assessed desired services. In addition, the hospitalists were provided 1-hour seminars on geriatric syndromes and risks of hospitalization. A flyer outlining the "who," "what," "why," and "how" of the new service was distributed to the hospitalist groups' physicians, staff, and hosted trainees.

The consulting geriatrician identified two hospitalists who showed particular interest in the program and agreed to pilot the consultation process before expanding it to the larger group. Hospitalists were informed of the proactive and preventive approach of the service and that the consulting team focused on cognitive and physical function rather than disease-specific medical issues. The team was also careful to provide complementary, rather than duplicative, clinical care. Finally, at the hospitalists' request, the team wrote orders and provided daily follow-up, optimizing implementation of recommendations.

To aid in identifying patients who might benefit from geriatric evaluation, the geriatrician joined the hospitalists' daily clinical team meetings. Patients at greatest risk for functional decline were proactively targeted for consultation soon after admission. These patients are usually aged 85 and older or 70 and older with cognitive or physical impairments.^{7,24} This also happened to be the group of patients for which the hospitalists were most interested in gaining geriatrics input. The aim was to provide consultation to patients admitted from home or assisted living and prevent long-term nursing home placement, but to develop relationships and facilitate collaboration, the geriatrics team honored all requests for consultation.

The Proactive Geriatrics Consultation Model

Key components of the consultation service are listed in Table 2. The Proactive Geriatrics Consultation Service includes a geriatrician and a NP. The NP was hired after the geriatrician had established the service, when credibility among the hospitalists had risen and the volume of referrals had increased. Initially, the NP's role was to assist in identifying patients meeting criteria for consultation (85 or 70 with cognitive or physical impairment). During the hospitalists' daily meeting, the hospitalists are asked about potential geriatric evaluation of newly admitted patients meeting criteria. Alternatively, when a patient appropriate for consultation was identified outside of the meetings, the consulting team called the hospitalist to ask about the need for geriatrics involvement. It was felt that this individualized dialogue between teams regarding the indications for consultation was appropriate, regardless of who initiated the dialogue. Consultations focused on physical and cognitive function, allowing the hospitalist to focus on the acute medical illness. The

consultation service thus provided support and complemented the hospitalists' role in the care of their older patients at risk for inpatient complications and functional decline.

For each consultation, according to the patients' underlying geriatric problems and needs, the NP contacted other hospital-based personnel, such as rehabilitative therapists, social workers, pharmacists, and discharge planners, to provide an interdisciplinary approach to care. Although not formal members of the consultation service, these professionals provided advice or therapy to patients and participated in family conferences when requested. In addition, to complete the consultation process, the NP or geriatrician contacted the outpatient primary care physician and the patient's family or caregiver to obtain information about the patients' baseline function and discuss the care plan and disposition. The NP also assisted the geriatrician in the initial phase of the history and physical examination by reviewing the history of present illness and reason for admission, obtaining the social and family history, reviewing activities of daily living, reviewing home and hospital medications, performing a skin examination, assessing vision and hearing, and administering the Mini-Mental State Examination²⁵ and Geriatric Depression Scale.²⁶

The geriatrician's role was to perform a geriatric assessment focusing on the patient's cognitive and physical function and the effect of the acute illness on any change from baseline. Facilitated by the information and findings of the NP's evaluation, the geriatrician was able to target his evaluation on areas of concern and potential intervention. The geriatrician routinely evaluated cognition and mood and performed a neurological examination, including a gait assessment. Upon completing the assessment, the geriatrician immediately communicated by telephone to the referring hospitalist any findings and individualized evidence-based recommendations. In collaboration with the hospitalists, the consulting team remained involved in daily care and wrote orders on the geriatric concerns identified, including discharge planning and outpatient geriatrics follow-up as indicated.

Setting and Administrative Structure

The consultation service was developed in a 750-bed, Midwestern, urban, community teaching hospital. The medicine hospitalist program was created in 1998 and is one of Indiana's largest, consisting of more than 20 physicians and several NPs and physician assistants. They work in teams with hospital pharmacists, social workers, and care managers. The institution's Senior Health Services, in addition to providing outpatient care, offered traditional inpatient consultation to patients admitted primarily to the psychiatry and surgery services. A different geriatrician staffed this consultation service, which was completely independent from the Proactive Geriatrics Consultation Service.

Multidisciplinary Geriatrics Interest Group

To identify an interdisciplinary team of hospital providers with an interest in caring for older patients, the geriatrician invited nurses, physical therapists, case managers, and social workers to monthly meetings to discuss challenging issues in the care of hospitalized elders. The group was used partly to gain input about how the new consultation service could enhance geriatric care. The NP coordinated the meetings by sending invitations and offering members the opportunity to provide cases for discussion. The interest group grew from 10

to more than 25 members. Several members became strong advocates of the service and devoted time to identifying patients appropriate for referral.

IMPLEMENTATION OF THE PROACTIVE GERIATRICS CONSULTATION MODEL

Patient Characteristics, Reasons for Referral, and Disposition

The Proactive Geriatrics Consultation Service was initiated in mid-February 2004. By the end of December 2007, the consulting team had conducted 1,538 consultations in 1,358 patients with a mean age of 81 (range 56–103). Most patients evaluated were women (66%) and admitted from home (91%), including assisted living. Seventy percent were white; 29% were black. The reasons for referral cited by hospitalists requesting consultation by the Proactive Geriatrics Consultation Service in the fourth year of the program (2007) were poor function (34%), new-onset confusion (24%), cognitive deficit (22%), depressed mood (6%), disposition (4%) or social concerns (4%), falls (4%), poor nutrition (2%), and medication concerns (1%). Most patients evaluated by the consulting team were discharged to home (44%) or to a skilled nursing facility for rehabilitation (44%). Except for in-hospital deaths (<1%) and transfers to hospice (2%), the remaining discharges were to long-term nursing homes (10%).

Geriatrics Consultation Team Diagnoses and Recommendations

The most common geriatrics conditions identified by the geriatrics consultation team in 2007 and reported here as frequency of being one of the top three diagnoses were gait instability (92%), delirium (41%), depression (37%), dementia (36%), malnutrition (35%), and mild cognitive impairment (29%). Other diagnoses were osteoporosis, urinary incontinence, sensory impairment, and difficulties with hospital discharges. Table 3 provides a list of the most frequent recommendations made by the Proactive Geriatrics Consultation Service according to diagnosis. Because the consultation team was responsible for implementation of its recommendations after discussing with the referring hospitalist, most recommendations were completed.

Growth in Number of Referrals

The number of referrals and referring physicians grew steadily over the first 4 years of the program. The consulting team conducted 194 consultations in 2004, 333 in 2005, 455 in 2006, and 556 in 2007. The availability and success of the consultation service led to the interest of other hospital services, including cardiology, nephrology, and non-hospitalist general internists and family medicine physicians. The number of referring physicians grew from 29 in 2004 to 86 in 2007.

Hospitalists' Satisfaction with the Service

A Web-based survey was conducted of all hospitalists who requested geriatrics consultation at least once between February 2004 and December 2007 and were still on the hospital medical staff in January 2008. Each referring hospitalist received an electronic-mail message inviting him or her to complete a 13-item questionnaire asking for ratings of the quality of

geriatrics consultation and services. Five-point Likert scales were used to rate satisfaction. The institutional review board approved the study. Of the 34 hospitalists surveyed, 28 (82%) completed the questionnaire. All responding hospitalists agreed that the consultation service helped them provide better care to their older patients, and 27 (96%) rated the consultation service overall as excellent. Although feedback was positive, areas identified for improvement included timeliness of the consultation and provision of weekend coverage.

Hospital Quality Improvement Initiative

The consultation service was implemented as a quality-improvement initiative with the understanding that an evaluation of the service would be conducted after the first year to assist in decision-making regarding continued support. This evaluation was to include review of the geriatric conditions identified and treated by the geriatric consultation team and comparison of the length of stay (LOS) with that of patients not undergoing consultation. Upon completion of the first year of the program, geriatrics consultation records were reviewed to identify the geriatric conditions that the consulting team most frequently identified and treated. A comparison group of physicians consisting of hospitalists, family medicine physicians, and cardiologists who referred patients to the program was identified. Hospital administrative data were used to compare LOS index and variable direct costs, adjusted for case mix index (CMI), of patients seen by the consultation service and those seen by the comparison group of physicians. Patients in 2004 seen by the geriatrics consultation team and aged 70 and older, referred within 3 days of admission, and admitted from home including assisted living were compared with patients aged 70 and older admitted to the comparison group but without a geriatrics consultation. LOS index was determined by dividing the actual LOS by the LOS predicted by the Centers for Medicare and Medicaid Services. Variable direct cost was calculated within the hospital's cost accounting system based on specific utilization for a population and represents the component of hospital cost associated with direct patient care. CMI is the weighted average of relative weights associated with diagnosis-related group. CMI-adjusted variable direct cost was calculated by dividing the variable direct cost by the corresponding CMI.

In the first year of the program, the most frequent geriatric conditions identified and treated by the consultation team were difficulty walking and falls, delirium and dementia, depression, urinary incontinence, chronic pain, malnutrition, and polypharmacy. In 2004, the LOS index and CMI-adjusted variable direct cost per patient were interpreted as being the same or lower in patients receiving a geriatrics consultation than in those without (Table 4). Analyses in 2005, 2006, and 2007 demonstrated similar trends in LOS index and CMI-adjusted variable direct cost comparisons (Table 4).

Costs of the Program

In the fourth year (2007), the program consisted of a 0.65 full-time equivalent (FTE) geriatrician (0.55 FTE in clinical care and 0.10 FTE in administrative responsibilities) and a 1.0 FTE NP. Including salary and fringe benefits, malpractice insurance, continuing medical education, and practice administrative expenses, the estimated total cost of the consultation service was \$256,110. Revenue from Medicare-reimbursed visits billed by the geriatrician and NP (556 initial consultations (3 using code 99251; 2, 99252; 92, 99253; 332, 99254; and

127, 99255) and 936 follow-up visits (216 using code 99231; 533, 99232; and 187, 99233)) offset approximately 61% of these costs. Otherwise the hospital subsidized the consultation service to cover providers' costs.

Factors for Success

It is likely that multiple factors played a role in the success of establishing the consultation service. The geriatrician's leadership skills; expertise in geriatrics; and efforts to introduce the Proactive Geriatrics Consultation concept to hospitalist group leaders initially and then to other hospitalists by conducting meetings, providing lectures, and piloting cases all helped to move the program forward and gain the hospitalists' trust and recognition of the value of the service. Most patients were seen within 48 hours of admission, and no referrals were rejected. It was felt that a request for consultation was a request for help and thus should be honored. The small team of a geriatrician and a NP created a personal, almost one-to-one interaction with the hospitalists and other referring physicians. Including various disciplines in the interest group led to recognition of the consultation service as an asset by complementing the more "medical" kinds of care. In addition, working in close collaboration and focusing on optimizing functional status helped avoid the perception of "overseeing" or "policing" hospitalist care.

Barriers and Solutions

Special challenges stood in the way of this endeavor. In the initial phases of implementation, some referring physicians questioned the value of this added specialty consultation service, but after learning more about different reported models of hospital care for older adults and experiencing the geriatrics consultation on their own patients, the same hospitalists often became advocates of the program. As the consultation service grew, the consulting team had limited capacity to see patients in a timely manner. To accommodate the increased volume, the geriatrician's time dedicated to the service was expanded, and a NP was hired.

Limitations

This study had two main limitations. First, the success of the Proactive Geriatrics Consultation Service may be attributable to the individuals who championed the new service and thus may be difficult to replicate, but other geriatrics interdisciplinary teams starting new and innovative hospital services have successfully used the "ABCs" process of geriatrics program implementation,^{22,23,27} and neither the geriatrician nor the NP had prior experience in starting a new program or working with hospitalists. Successful implementation of the model rests primarily upon following the process of care described in this article. This view-point was validated during times of service coverage by alternate providers. Second, the study was not a randomized controlled trial, and statistical comparisons were not conducted. Thus, selection bias, other unmeasured factors, or inadequately adjusted analyses may account for results presented in Table 4. The comparison group may not be directly comparable with the intervention group. Nevertheless, with these limitations, hospital administrators viewed differences between groups in LOS index and hospital costs as favorable toward geriatrics consultation. This was, in part, due to the realization that a greater proportion of patients referred for geriatrics consultation were likely to have cognitive impairment, dependencies in activities of daily living, require

first-time nursing home placement, or any combination of these three. These factors are known to be associated with prolonged LOS and higher inpatient costs and yet are not included in case-mix adjustments.^{28,29}

Educational Applications

Once the service was well established, the geriatrician developed a curriculum for geriatric medicine fellows and internal medicine residents to train them in the special health needs of older hospitalized patients. Weekly and monthly rotations were provided for residents and fellows, respectively. The teaching strategies included small-group discussions coupled with clinical experience with specific learning objectives, including the assessment of cognitive and physical function, recognition and treatment of geriatric syndromes, and teamwork with personnel from multiple disciplines. Residents have ranked the Proactive Geriatrics Consultation Service as one of the best learning experiences provided during their geriatrics rotation. Informal feedback and observations have indicated that the new consultation service has also indirectly helped to elevate the knowledge and skills in geriatric care of referring hospitalists and involved hospital staff.

CONCLUSION

In conclusion, in a large community teaching hospital, a group of hospitalists was successfully worked with to develop a proactive inpatient geriatrics consultation program focusing on preventing functional decline of hospitalized older patients. The hospitalists responded favorably and valued the consultation service highly. Quality improvements, lower LOS index and hospital costs, and contributions to physician training programs led to the sustainability and growth of the service. The Proactive Geriatrics Consultation Service represents a promising model of collaboration between geriatricians and hospitalists toward improved hospital care for older adults and one that warrants more rigorous evaluation.

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Conflict of Interest:

The editor in chief has reviewed the conflict of interest checklist provided by the authors and has determined that the authors have no financial or any other kind of personal conflicts with this paper.

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Table 1.

Models of Inpatient Geriatrics Consultation

Model	Targeting Criteria	Team Members	Comprehensive Geriatrics Assessment	Team Conferences	Implementation of Recommendations	Follow-Up Visits	Discharge Planning	Positive Effect*
Hogan et al. ¹¹	75, geriatric condition	G, RN, PT	Yes	Weekly	No	Yes	Yes	Yes [‡]
Becker et al. ¹²	75, at risk for complications	G, F, CNS, SW	Yes	No	No	Yes	No	No
Gayton et al. ¹³	70, admit from ED	G, CNS, SW, OT, PT, Other	Yes	Weekly	No	Yes	Yes	No
McVey et al. ¹⁴	75	G, F, CNS, SW	Yes	Regularly	No	No	No	No
Winograd et al. ¹⁵	65, functionally impaired	G, F, HS, CNS, SW	Yes	Weekly	No	Yes	Yes	No
Inouye et al. ¹⁶	70	G, CNS, RN	No	Twice weekly	No	Yes	Yes	Yes [‡]
Reuben et al. ¹⁷	65, geriatric condition	G, NP, SW	Yes	Daily	Partial	Yes	Yes	No
Kircher et al. ¹⁸	65, functionally impaired	G, RN, SW, Other	Yes	Weekly	Yes	Yes	Yes	No
Present Model	70, functionally impaired	G, NP	Yes	Daily	Yes	Yes	Yes	Yes [§]

Excludes unit-based consultation services and models that do not include geriatrician involvement.

* Studies cited were conducted as randomized controlled trials except Gayton and Inouye, which were a controlled trial and prospective cohort study, respectively.

[‡] Improved mental status and fewer medications at discharge, and lower short-term death rates.

[‡] Less functional decline in subgroup with one of four geriatric conditions at baseline (delirium, functional impairment, incontinence, or pressure sores).

[§] Favorable satisfaction survey of referring hospitalists and increase in the number of referrals and referring hospitalists.

G = geriatrician; F = geriatrics fellow; HS = housestaff; NP = nurse practitioner; CNS = clinical nurse specialist; RN = registered nurse; SW = social worker; PT = physical therapist; OT = occupational therapist; Other = other disciplines involved as a part of the interdisciplinary consultation team as needed.

Table 2.

Important Components of the Proactive Geriatrics Consultation Service

Proactive case finding in collaboration with the hospitalists
Early involvement, preferably within the first 24 hours of hospital admission
Focus on evaluation and management of geriatrics syndromes and functional and psychosocial issues so as to complement hospitalist care of the acute medical illness
Geriatrician and geriatrics nurse practitioner core team that draws on the expertise of other disciplines individualized to patient needs
Evaluation and assistance in management (including writing orders) to implement recommendations and ensure progress toward goals of care
Early attention to discharge planning and assistance with arrangements for postdischarge follow-up and continuity of care

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Table 3.

Most Common Diagnoses and Corresponding Recommendations of the Proactive Geriatrics Consultation Team in the Fourth Year of the Program (N = 556)

Diagnoses and Recommendations	Number/Total (%)
Gait instability	509/556 (92)
Order physical therapy consultation	500/509 (98)
Increase activity	484/509 (95)
Evaluate for possible cause(s)	224/509 (44)
Change medication(s)	210/509 (41)
Provide adequate pain management	201/509 (39)
Remove urinary catheter and/or tethers	122/509 (24)
Delirium	229/556 (41)
Change medication(s)	183/229 (80)
Evaluate for possible cause(s)	164/229 (72)
Increase activity	147/229 (64)
Assure frequent reorientation	125/229 (55)
Remove urinary catheter or tethers	104/229 (45)
Administer antipsychotic medications	57/229 (25)
Optimize sleep	49/229 (21)
Provide adequate pain management	38/229 (17)
Order physical therapy consultation	23/229 (10)
Depression	208/556 (37)
Start antidepressant medications	170/208 (82)
Evaluate for possible cause(s)	126/208 (61)
Change medication(s)	104/208 (50)
Obtain psychiatry consultation	45/208 (22)
Increase socialization	34/208 (16)
Optimize sleep	31/208 (15)
Dementia	200/556 (36)
Evaluate for possible cause(s)	158/200 (79)
Start cholinesterase inhibitors	146/200 (73)
Change medication(s)	140/200 (70)
Obtain formal neuropsychiatric testing	27/200 (14)
Discuss advance directives	23/200 (12)
Malnutrition	196/556 (35)
Add nutrition supplements or multivitamins	184/196 (94)
Advance or change diet	132/196 (67)
Evaluate for possible cause(s)	104/196 (53)
Order speech therapy consultation	50/196 (26)
Change medication(s)	27/196 (14)
Obtain gastroenterology consultation to insert feeding tube	24/196 (12)
Mild cognitive impairment	162/556 (29)

Diagnoses and Recommendations	Number/Total (%)
Evaluate for possible cause(s)	143/162 (88)
Change medication(s)	126/162 (78)
Obtain formal neuropsychiatric testing	29/162 (18)
Start cholinesterase inhibitors	28/162 (17)
Obtain neurology consultation	16/162 (10)

Diagnoses are reported as frequency of being one of the top three diagnoses in each of the 556 consultations in 2007.

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Table 4. Hospital Length of Stay (LOS) Index and Cost for Proactive Geriatrics Consultation Versus Comparison Group

Year	Group	Cases, n	Age	Average LOS	CMS Mean LOS	CMS LOS Index*	CMI	Variable Direct Cost	CMI-Adjusted Variable Direct Cost [†]
2004	GC	129	82.8	5.1	4.2	1.21	1.19	3,862	3,238
	CG	2,200	79.8	5.8	4.2	1.39	1.28	4,207	3,285
2005	GC	226	82.6	5.0	4.0	1.24	1.07	3,544	3,307
	CG	2,186	80.0	5.5	4.3	1.27	1.35	5,004	3,719
2006	GC	275	82.8	4.5	3.9	1.16	1.07	3,447	3,229
	CG	3,974	79.4	6.0	4.5	1.32	1.70	6,414	3,773
2007	GC	241	82.7	5.2	3.2	1.60	1.19	4,062	4,426
	CG	3,801	79.3	6.2	3.5	1.74	1.74	6,775	5,234

No statistical comparisons were conducted.

* Determined by dividing the actual LOS by the LOS predicted by the Centers for Medicare and Medicaid Services (CMS).

† Calculated by dividing the variable direct cost by the corresponding Case Mix Index (CMI).

GC = geriatrics consultation; CG = comparison group.