The purpose of this study was to evaluate high-risk older adults' satisfaction with outpatient geriatric evaluation and management (GEM). Community-dwelling Medicare beneficiaries \( n = 522 \) age 70 years and older who had a high probability of repeated admission to hospitals \( (P_r > .40) \) were randomly assigned to receive either usual care or GEM for six months. Despite the stresses imposed by outpatient GEM (e.g., new relationships with providers, frequent office visits and changes in treatments), the mean satisfaction scores of the recipients of GEM were 9% higher than those of the recipients of usual care \( (4.31 \text{ vs } 3.96, \ p < .001) \). The primary physicians of GEM recipients were also highly satisfied with GEM care.

Key Words: Patient satisfaction, Consumer satisfaction, Ambulatory care, Geriatric assessment, High-risk elderly patients

Satisfaction With Outpatient Geriatric Evaluation and Management (GEM)

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Patients' satisfaction with health care is regarded as an indicator of quality, and quality ratings are being used increasingly by consumers and other purchasers for selecting health plans and care providers (Pascoe, 1983); high ratings help plans to retain current clients and attract new ones (Davies & Ware, 1986; Davies, Ware, Brook, Peterson, & Newhouse, 1986). Persons who are satisfied with their health care are less likely to "doctor shop" (Marquis, Davies, & Ware, 1983), to sue for malpractice (Vaccarino, 1977) or to disenroll from managed care plans (Ware & Davies, 1983). They are more likely to seek appropriate medical care, to keep their appointments (Pascoe, 1983), to continue their relationships with their physicians, and to follow their physicians' recommendations and prescriptions (Linn, Linn, & Stein, 1982; Pascoe, 1983). Each increase of one point on a 20-item satisfaction scale is associated with a 3.4% decrease in the likelihood that a person will change providers during the following year (Marquis, Davies, & Ware, 1983). Medicare beneficiaries who are not satisfied reported "problems with physicians" as the leading reason for disenrolling from Medicare risk plans in 1996 (Nelson et al., 1996).

Outpatient geriatric evaluation and management (GEM) is a sustained, intensive interdisciplinary process that begins with a comprehensive geriatric assessment (CGA) of many factors that affect health and continues until the implementation of a new plan of care has been completed. It is designed to maximize the health and the physical, psychological, and social functioning of high-risk older persons. Because of the stresses for patients participating in outpatient GEM (e.g., new health care providers, frequent office visits, changes in treatments), there has been concern that GEM may not be satisfactory to older adults. A randomized trial of outpatient GEM that addressed this issue reported higher global satisfaction among recipients of GEM than among recipients of usual care (Engelhardt et al., 1996). In a nonrandomized study, all the recipients of outpatient GEM rated their care as either excellent (81%) or good (19%); (Boult et al., 1994).

The purpose of this study was to evaluate, among other outcomes, high-risk older adults' satisfaction with seven aspects of outpatient GEM. Because the long-term effectiveness of GEM probably depends in part on primary physicians' willingness to support the care provided to their patients by GEM programs, we also explored the degree to which primary physicians were satisfied with GEM care. The study proposal was approved by the University of Minnesota Institutional Review Board.

Methods

Recruitment

Between December 1994 and October 1995, a four-page survey was mailed to the 23,801 community-dwelling Medicare beneficiaries age 70 years and older who were living in or near Ramsey County, Minnesota, and who were not enrolled in managed care.
plans (see Figure 1). To be eligible for participation, respondents had to have a high probability of repeated admissions (Pr) to hospitals during the following four years. Pr was calculated from the answers to eight of the survey questions and then classified as high (Pr ≥ .40) or low (Pr < .40) (Boult, Boult, Pirie, & Pacala, 1994; Boult, Pacala, & Boult, 1995; Boult et al., 1993; Pacala, Boult, & Boult, 1995; Pacala, Boult, Reed, & Aliberti, 1997).

All 2,286 high-risk respondents were contacted by telephone to determine their eligibility and interest in participating in the study. Exclusion criteria (and the number of persons excluded) were: inability to provide information by telephone (139), serious present illness (134), anticipated travel (105), insurance barriers (54), death (33), and lack of response to calls (15). Of the 1,806 eligible persons, 621 (34.4%) gave written informed consent to participate and were called for a baseline telephone evaluation of their: general health (single question; Kovar, Fitti, & Chyba, 1992), affect (Geriatric Depression Scale [GDS]; Yesavage & Brink, 1983), and level of disability (Sickness Impact Profile: Physical Functioning Dimension [SIP:PFD]; Bergner, Bobbitt, Carter, & Gilson, 1981). Upon completion of the baseline interview, participants were randomly assigned to receive either usual care or GEM for 4 to 6 months. The primary physicians of all of the study participants were informed that their patients were at high risk for hospital admission or GEM for 4 to 6 months. The primary physicians included advance information about the study (through local professional newsletters and oral presentations) and telephone conversations with primary physicians. During these conversations, the study’s principle investigator (CB) explained the study to the primary physicians, promised prompt and frequent communication of information about their patients’ clinical status, and provided reassurance that the GEM program would discharge their patients at the conclusion of the study. The primary physicians of 92% of the eligible participants gave permission for their patients to participate. In order to compensate for attrition during this 4-step enrollment process, more participants were randomized to the experimental group (n = 294) than to the control group (n = 274). Of those assigned to the experimental group, 10 were eliminated because their physicians refused to give permission and 36 withdrew. Altogether, 248 participants were enrolled in the experimental group and 274 in the control group.

**Interventions**

The participants in the control group received whatever health care they and their physicians deemed appropriate (“usual care”). Those in the experimental group received a comprehensive geriatric assessment, which was followed by primary care visits (an average of seven office visits) and continuous case management by one of three teams, each consisting of a geriatrician, a nurse, a social worker, and a gerontological nurse practitioner (Boult, Boult, Morishita, Smith, & Kane, 1998). The team’s social worker initiated the evaluation with a home visit during which she provided information about GEM, assessed the participant’s psychosocial and environmental needs, identified current medications, and arranged the participant’s initial visit to the GEM clinic for a history and a physical examination by the GEM gerontological nurse practitioner. At the second clinic visit, the GEM nurse, the social worker, and the geriatrician completed the evaluation and developed treatment goals and a plan of care. During subsequent visits, the team provided medical treatment, educational information, counseling, referrals to agencies and other professionals, and assistance with advance directives. At the end of each clinic day, the GEM team met to review each patient’s progress. When the team members agreed that a person had attained his or her GEM treatment goals or was adhering to a comprehensive plan of care that could be continued successfully without the GEM team, they designated the person as ready for discharge. They then scheduled a transitional visit at the GEM clinic after which they discharged the participant from the GEM program.

The nurses and social workers had bachelor’s degrees and professional experience with older adults, community-based care, and interdisciplinary teams. The geriatricians were family physicians who had completed 2-year geriatrics fellowships and had received the Certificate of Added Qualifications (CAQ) in geriatrics from the American Board of Family Practice.

**Measurement of Satisfaction**

Participants in both groups were sent the Patient Satisfaction Questionnaire (PSQ-18; Marshall & Hays, 1994), an 18-item instrument with seven subscales (measuring general satisfaction, technical quality, in-

```
23,801 Medicare beneficiaries screened
  ↓
14,536 (61.1%) respondents
  ↓
2,286 (15.7%) high-risk respondents
  ↓
1,806 (79.0%) eligible respondents
  ↓
621 (34.4%) consenting respondents
  ↓
568 (91.5%) randomized respondents
  ↓
274 (48.2%) controls
294 (51.8%) experimental
  ↓
274 (100%) enrolled controls
248 (84.4%) enrolled experimental
```

Figure 1. Recruitment of participants.
terpersonal manner, communication, financial aspects of care, time with physician, and accessibility). Its 18 items consist of 9 positively and 9 negatively phrased statements to which the five possible Likert responses are: strongly agree, agree, uncertain, disagree, and strongly disagree. The PSQ-18 was derived from the PSQ-III, a 50-item instrument, the subscales of which have high internal reliability (Cronbach's alpha 0.77–0.89; Marshall & Hays, 1994). The shortened version used here, which takes 3–4 minutes to complete, was designed to decrease the burden on respondents. Its subscales have internal reliability of 0.64–0.77 and correlations of 0.90 or higher with six of the seven subscales of the PSQ-III (Marshall & Hays, 1994). Individual PSQ-18 scores are expressed as means (range = 1–5).

In addition to the items of the PSQ-18, the questionnaire sent to the experimental participants included four statements (with Likert responses) specifically about GEM: “The GEM staff was hard to reach by phone”; “The GEM staff helped me to understand my health conditions”; “The GEM clinic was conveniently located”; and “I would recommend the GEM program to others.” Participants were also asked whether the GEM program had helped them in any of 12 specific ways, (e.g., a better understanding of health, decreased worries, feeling better, increased participation in activities outside the home).

The questionnaire was mailed to experimental participants within 2 weeks of their discharge from GEM care. The PSQ-18 was mailed to the control group during February and March 1996 (shortly after the final participants were enrolled). Nonrespondents in both groups were sent a second questionnaire 2 weeks after the first; subjects who did not respond to the second mailing were telephoned once and asked to complete the questionnaire.

Approximately 2 weeks after experimental participants were discharged from GEM care, a 4-item questionnaire (with Likert responses) was sent to their primary physicians asking about agreement or disagreement with four statements: that GEM care had been appropriate, helpful to the patient, and helpful in the physician’s continuing care of the patient, and that he or she would refer other frail elderly patients to a GEM program.

**Results**

**Baseline Characteristics**

At randomization, the control and experimental groups were similar in their sociodemographic characteristics, recent use of physicians and hospitals, Pₐ values, and prevalence of diabetes, depression, coronary artery disease, functional disability, and poor health (see Table 1). In contrast, when the groups’ general health, GDS, and SIP:PFD scores were analyzed as continuous (rather than dichotomous) variables, the means for the control group were significantly higher (less favorable) than the means for the experimental group (3.6 vs 3.4, p < .05; 4.9 vs 3.8, p < .05; and 14.4 vs 11.4, p < .01, respectively). Most participants, including 98.8% of the control group, had established relationships with primary physicians: 7.1% had relationships with geriatricians, 30.2% with family physicians, and 59.6% with internists.

**Participants’ Satisfaction With Health Care**

The response rates among surviving participants (97.5%) in the control and experimental groups were 96.6% and 91.7%, respectively, or 94.3% overall. Seven control and six experimental participants died during the course of the study. As shown in Table 2, the overall mean PSQ-18 score for the experimental group was 8.8% higher than that of the control group (4.31 vs 3.96, p < .001). The mean satisfaction ratings of

<table>
<thead>
<tr>
<th>Table 1. Baseline Characteristics</th>
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<tr>
<td></td>
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<tr>
<td>Mean Pₐ</td>
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<tr>
<td>Mean age (years)</td>
</tr>
<tr>
<td>White race</td>
</tr>
<tr>
<td>Male sex</td>
</tr>
<tr>
<td>Independent residence</td>
</tr>
<tr>
<td>Caregiver available</td>
</tr>
<tr>
<td>Poor general health</td>
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<tr>
<td>Functional disability</td>
</tr>
<tr>
<td>Depression</td>
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<tr>
<td>Diabetes</td>
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<tr>
<td>Coronary artery disease</td>
</tr>
<tr>
<td>7+ Physician visits in past year</td>
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<tr>
<td>2+ Hospital admissions in past year</td>
</tr>
</tbody>
</table>

Note: None of the differences between the groups was significant at the level of p < .05.

Footnotes:

a Component of PSQ-18.

b SIP:PFD > 30.

c GDS > 14.
the care provided by the three GEM teams were 4.37, 4.33, and 4.21. Analysis of variance showed that the differences among these scores were not statistically significant \((F = 1.92, p = .15)\). The mean scores on the seven subscales were 5% to 11% \((p < .001)\) more favorable in the experimental group. The overall mean PSQ-18 score among American outpatients age 65 years or older is 4.00 (Marshall & Hays, 1994). Compared to the control group, a higher percentage of experimental participants \((41.1\%\) vs 19.6\%, \(p < .001)\) expressed high satisfaction with their care \((\text{mean PSQ-18} = 4.50-5.00)\); a lower percentage of the experimental group \((22.9\%\) vs 44.2\%, \(p < .001)\) expressed low satisfaction \((\text{mean PSQ-18} < 3.33)\).

When multiple linear regression was used to adjust for the baseline differences between the experimental and control groups’ mean general health, GDS, and SIP:PFD scores, participants’ treatment group remained a powerful and significant independent predictor of satisfaction \((\text{standardized } B = .299, p < .0001)\). GDS score was also a significant but weaker predictor \((\text{standardized } B = -.153, p < .01)\), whereas general health and SIP:PFD scores were not significant predictors \((\text{standardized } B = -.074\) and -.076, respectively, \(p > .10)\).

To determine whether higher satisfaction with GEM was limited to participants with particular characteristics, we compared the experimental and control groups’ satisfaction ratings within subgroups defined by age \((70–84\) and 85+ years), sex \((\text{male} \& \text{female})\), \(P_a\) values \((.40–.54 \& .55+)\), general health \((\text{poor/fair} \& \text{good/very good/excellent})\), disability \((\text{SIP:PFD} 0–29 \& 30+)\), depression \((\text{GDS} 0–13 \& 14+)\), physician visits in the past year \((0–6\) and 7+), and hospitalizations in the past year \((0–1\) and 2+). In 14 of these 16 subgroups, the GEM recipients had significantly higher mean PSQ-18 scores than the controls \((p < .001)\). The subgroups in which the differences between the GEM and control groups’ satisfaction ratings were the greatest were: women, persons age 85 and older, and persons with \(P_a\) values of .55 or higher. Even in the other two subgroups \((\text{participants with GDS scores of 14+} \& \text{those with SIP:PFD scores of 30+})\), the GEM recipients had higher mean PSQ-18 scores than the controls \((3.9 \& 3.6, \text{and} 4.0 \& 3.8, \text{respectively})\), but these differences did not reach statistical significance.

In response to the four statements about GEM, the experimental respondents indicated that the GEM staff had helped them to understand their health conditions \((\text{mean } \pm SD = 4.46 \pm .68)\), that the GEM clinic was conveniently located \((4.35 \pm .77)\), that the GEM staff was easy to reach by phone \((4.45 \pm .62)\) and that they would recommend the GEM program to others \((4.48 \pm .79)\). In response to the statements about the GEM program’s mode of action, the most frequent affirmative responses were that GEM had helped the participant by giving the person a better understanding of health \((93\%\), improving how the participant felt \((91\%)\), decreasing the participant’s worries \((82\%)\), reducing discomfort \((79\%)\), helping the participant to do more \((77\%)\), making medications easier to take \((74\%)\), helping the participant to exercise more \((70\%)\), providing new information about food \((64\%)\), and helping the participant to have more energy \((64\%)\).

### Primary Physicians’ Satisfaction with GEM

For the 238 experimental participants who had primary physicians, 160 responses to the physician survey were received \((\text{response rate} = 67.2\%)\). On average, the physicians agreed that the GEM care of their patients had been appropriate \((\text{mean } \pm SD = 4.04 \pm .77)\), helpful to their patients \((3.73 \pm .96)\), and helpful to them \((\text{the physicians})\) in the continuing care of their patients \((3.36 \pm 1.06)\). They also agreed \((3.54 \pm 1.15)\) that, “If this program were available without cost, I would refer frail elderly patients to it in the future.” Seventy-one percent of the surveyed primary physicians had one patient in the experimental group, 23% had 2–3, and 6% had 4–7.

These are the first outcome data available from this randomized trial of outpatient GEM. The 18-month effects of the intervention on functional ability, depressive symptoms, mortality and the use and cost of health care will be published in 1999.

### Discussion

In previous studies, the true differences between the levels of satisfaction associated with different forms of health care have been difficult to evaluate because older persons tend to rate even marginal care highly. They tend to have vague expectations of care and dependent relationships with their providers, and they are reluctant to express dissatisfaction \((\text{Owens \& Batchelor, 1996})\). For example, older adults report only 2.5% greater satisfaction with the fee-for-service care than with capitated care \((\text{Kasper \& Riley, 1992})\), compared to the 5.6% difference reported by younger, healthier persons \((\text{Davies et al., 1986})\).

In the present study, satisfaction in both the experimental and the control groups was high, but satisfaction with outpatient GEM was significantly higher \((8.8\%, p < .001)\). This difference occurred despite the control physicians’ knowledge that their patients

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**Table 2. Mean Satisfaction Ratings as Measured by the PSQ-18**

<table>
<thead>
<tr>
<th>Subscale scores</th>
<th>Control Group (n = 258)</th>
<th>Experimental Group (n = 222)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate PSQ-18 score</td>
<td>3.96</td>
<td>4.31</td>
<td>7.23</td>
</tr>
<tr>
<td>Subscale scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General satisfaction</td>
<td>3.86</td>
<td>4.28</td>
<td>5.75</td>
</tr>
<tr>
<td>Technical quality</td>
<td>3.93</td>
<td>4.20</td>
<td>4.91</td>
</tr>
<tr>
<td>Interpersonal manner</td>
<td>4.26</td>
<td>4.49</td>
<td>4.22</td>
</tr>
<tr>
<td>Communication</td>
<td>4.04</td>
<td>4.41</td>
<td>5.99</td>
</tr>
<tr>
<td>Financial aspects</td>
<td>3.91</td>
<td>4.34</td>
<td>6.64</td>
</tr>
<tr>
<td>Time spent with physician</td>
<td>3.93</td>
<td>4.30</td>
<td>5.27</td>
</tr>
<tr>
<td>Accessibility</td>
<td>3.90</td>
<td>4.21</td>
<td>5.39</td>
</tr>
</tbody>
</table>

*Note: \(p < .001\) for all differences between group means.*
were controls in a study of the outcomes of different models of health care, which could have motivated them to provide optimal care. In addition, the patient panel of almost half (48.9%) of the control physicians included one or more experimental participants, about whom the control physicians received progress reports or discharge summaries that described the processes of GEM care.

In the absence of a gold standard, the clinical significance of differences between satisfaction ratings is difficult to interpret, but it may be inferred from comparisons with other studies. The 8.8% difference observed in this study is roughly three times greater than the 2.5% difference between older persons’ reported satisfaction with fee-for-service versus capitated care. It is almost twice the 4.9% difference reported in an earlier study of outpatient GEM (Engelhardt et al., 1996).

Higher satisfaction with GEM care was reported by all 16 subgroups studied, and these differences were significant in all but two subgroups: participants who were depressed (GDS \( \geq 14 \)) and those who were functionally disabled (SIP: PFD \( \geq 30 \)). These findings suggest that the satisfaction levels of older persons with depression or disability may be less sensitive to the type of health care they receive.

The higher satisfaction ratings associated with GEM are not surprising. It is known that satisfaction is related to the duration of visits with physicians and to the extent that physicians address the issues raised by older persons (Greene, Adelman, Friedman, & Charon, 1994). Although they appreciate technical competence, older persons especially value the affective qualities of the physician-patient relationship (Cryns, Nichols, Katz, & Calkins, 1989). The nature of GEM care is well aligned with these preferences. At each visit, the GEM recipient spent about 30 minutes with his or her geriatrician (60 minutes in the initial visit) and an additional 15–30 minutes each with his or her nurse and social worker. The GEM team solicited and pursued goals identified by the participant and addressed psychosocial as well as medical needs. The GEM nurses and social workers focused on educational, preventive, psychosocial, and family-related aspects of treatment; they frequently called their patients at home to help coordinate all facets of their care.

Little is known from previous randomized studies about the effects of either GEM or CGA on older adults’ satisfaction with health care. Unfortunately, the few trials that have evaluated satisfaction have used different (and mostly untested) measures. Our findings are consistent, however, with those of another recent randomized trial of outpatient GEM in which a variant of the PSQ-18 also detected higher satisfaction with GEM than with usual care (Engelhardt et al., 1996).

Within both the experimental and control groups, satisfaction ratings were about 10% lower among participants who were depressed. After we used regression techniques to adjust for potential confounding by disability and general health (which are correlated with depression), the relation between depression and satisfaction appeared weaker, but it persisted (standardized \( B = -1.153, p < .01 \)). This finding is consistent with an earlier report that depression accounts for less than 1% of the variance in satisfaction ratings by chronically ill persons (Linn & Greenfield, 1982).

Because GEM is designed to supplement the ongoing care provided by primary physicians, it is important that primary physicians cooperate with GEM programs. A related study (of an in-home CGA program) found that cooperation was 42.5% higher among primary physicians who viewed the program as beneficial to their patients (\( p = .02 \); Bula et al., 1995). In the nonrandomized pilot phase of the present study, 20 primary physicians rated the GEM care of their patients (scale: 1 = lowest to 5 = highest) as appropriate (mean 4.5) and helpful (mean 4.2) (Boult et al., 1994). The results reported here provide further evidence that primary physicians view outpatient GEM as appropriate and helpful to their patients. This appreciation, coupled with older adults’ satisfaction with GEM, should enhance the effectiveness of collaboration between primary physicians and GEM teams in the future.

The application of these findings to other populations could be limited by the study’s size (one clinic with three teams), location (urban-suburban, Midwest) and population (mostly White). Although the processes used to select participants for randomized trials often introduce bias, the differences in satisfaction observed here appear to represent those of the local target population, i.e., high-risk, community-dwelling older people. As reported in detail elsewhere (Boult, Boult, Morishita, & Pirie, in press), this study’s participants were similar to the target population in \( P_m \) values, previous use of hospitals, and race, but slightly younger (79.1 vs 80.5 years) and more likely to be male (56.9% vs 44.4%).

As consumer satisfaction is increasingly monitored, disseminated, and accepted as an indicator of the quality of health care, it will influence providers’ and health plans’ stature in the community and in the marketplace. It will likely affect purchasers’ choices and, to some extent, the prices they are willing to pay for health care. Because satisfaction is associated with improved compliance with physicians’ recommendations, improved medical outcomes may result. To the extent that GEM leads to favorable perceptions of health care providers and organizations, it may receive increased interest from organized systems of health care.

References


