Senior Team Assessment and Referral Program—STAR

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Background: **Although comprehensive geriatric assessment has been found to improve health and function and decrease hospital admissions, most such programs are staff-intensive and take many hours or even days. The Senior Team Assessment and Referral Program (STAR) was developed to address these two issues by using a short but comprehensive outpatient health appraisal that required only a few health professionals to complete.**

Methods: **Six hundred forty-nine Kaiser Permanente health plan members aged 65 years or older who received their health care at the Kaiser Permanente Medical Center, San Jose, Calif, were randomly selected during the first 12 months of the study and invited by mail to participate in STAR. Of those members contacted, 326 agreed to join the study. A nurse practitioner evaluated the health, functional, and social status of each STAR participant at an office visit once each year for the next 3 years and provided case management for those participants found to be frail or in danger of becoming frail. A control group of 764 elderly (aged 65 years and older) Kaiser members with characteristics similar to those of the STAR participants was drawn from Kaiser Permanente health plan members in San Jose. They continued to receive usual medical care throughout the study. A medical-functional profile was developed to stratify each STAR participant's overall health and functional status at each visit and case management contact. The results were entered on a grid that was used as a tracking tool throughout the study. Utilization of medical services, changes in health and function, and effects of STAR interventions on participant health behaviors were measured, and primary care physician and participant satisfaction was assessed.**

Results: **Although short-term utilization of medical services increased in the STAR group, health, function, and health behaviors improved as a result of STAR interventions. Ninety-three percent of the STAR participants described a satisfactory experience, and 71 percent were very satisfied. Sixty-five percent of primary care physicians who responded to a satisfaction questionnaire found something useful for their patients in the STAR assessment.**

Conclusions: **STAR offers an efficient, minimally staff-intensive model for evaluating the health, functional, and social status of the 65-year-old and older age-group and intervening when they are frail or at risk of becoming frail. The improved health, function, and healthy behaviors in STAR participants and the high satisfaction rates among participants and physicians suggest that STAR would be a useful addition to the health care environment. (J Am Board Fam Pract 1997;10:398-406.)**

Comprehensive geriatric assessment in different settings has proved valuable for improving the health and function of the participants and producing more effective use of health resources.[1-4] Most such evaluations are time- and staff-intensive, however, making them unappealing for a busy health maintenance organization (HMO) or independent physician office practice, especially because such comprehensive geriatric assessment is not adequately reimbursed by Medicare. In addition, changes in Medicare funding make implementation of such programs even less likely. Accordingly, a short but comprehensive assessment and referral model becomes more attractive as long as it produces comparable results.

The Senior Team Assessment and Referral

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Program (STAR) is a function-oriented, outpatient health appraisal and case management program developed in an HMO setting for members aged 65 years and older. STAR was tested at the Kaiser Permanente Medical Center, San Jose, Calif, during a 3-year period from 1990 through 1993. Each participant was given a clinical evaluation by a nurse practitioner at an office visit once each year for the 3 years of the study.

The goal of STAR was to develop and test an assessment that would (1) be relatively short but sufficiently comprehensive to establish a health and functional baseline for each participant at the first visit; (2) detect changes in health or function at subsequent visits; (3) pick out the frail elderly and those at risk of becoming frail, and institute measures to prevent or ameliorate decreasing health or function; (4) improve health and function by appropriate referral, case management, and education; (5) help the robust elderly remain that way by improving self-efficacy, health, and safety behaviors; (6) provide a useful health appraisal adjunct for the patient's primary care physician; and (7) result in long-term cost-effective use of health resources.

Methods

Three thousand Kaiser Permanente health plan members aged 65 years or older who received their health care at San Jose were randomly selected and mailed a self-administered screening baseline questionnaire by the Kaiser Permanente Division of Research in Oakland, Calif. Because there was interest in oversampling the oldest members (75 years and older), 100 percent of those 75 years and older were selected first, and the balance of the sample was drawn from members aged 65 to 74 years. In the final sample members aged 65 to 74 years represented 52 percent and those aged 75 years and older represented 48 percent of the study population. Two thousand were then randomly assigned to the treatment group, and 1000 were randomly assigned to the control group.

Of the 2000 members randomly assigned to the treatment group, 1461 responded to the baseline questionnaire; and of these respondents, 649 were randomly selected during the first 12 months and invited by mail, then with a follow-up telephone call, to participate in STAR. Three hundred twenty-six agreed to join.

Of the 1000 assigned to the control group, 786 responded to the baseline questionnaire, and 764 who matched by age and sex with the STAR group were selected during the first 12 months of the study. The baseline characteristics for the study and control groups were obtained from this baseline questionnaire. The study protocol was approved by the Kaiser Permanente Medical Care Program Institutional Review Board.

The index date for STAR participants and control group determined the end of baseline and the beginning of follow-up. For STAR participants the index date was the date of the first visit for the STAR evaluation in year 1, which began in June 1990. This first STAR visit was assigned to the follow-up period. For the control group, the index date was randomly assigned to dates in the same 12-month period during which STAR participants were enrolled and was proportionate to the number enrolled each month. The baseline period comprised the 365 days before the index date; the follow-up period ended at disenrollment from the Kaiser Permanente health plan, death, or on 31 December 1993.

To avoid duplication of medical services, 50 charts of the health plan members 65 years old or older who had multiple office visits were reviewed by the STAR team during the design phase of the study. This chart review showed that evaluation of special senses, gait and balance testing, tests of function, mental and mood testing, nutritional evaluation, and pneumococcal vaccine (Pneumovax) status were missing from most of the physical examinations. Nonprescription medication review was missing in 100 percent of the charts. Geriatricians consider these components essential to evaluate and manage effectively the health and function of older adults.

The yearly STAR evaluation began with a review of a detailed health, functional, and social questionnaire developed by the STAR investigators (Table 1) that the participant had completed at home. This questionnaire, and the physical examination that followed it, included already validated instruments, such as a vision impairment questionnaire,[5] a depression screening questionnaire,[6] the Katz et al[7] activities of daily living index, Tinetti's[8] gait and balance assessment, a hearing handicap inventory for the elderly,[9] and the Folstein Mini-Mental State test,[10] as well as demographic and health information. At each STAR

Table 1. The Senior Team Assessment and Referral Program Questionnaire—Health, Function, and Social Issues.

Demographics
Medical history—family and personal
Current immunization status
Evaluation of own health
Disease symptoms and signs including falls or injury in last 3 months
Vision questionnaire[5]
Medications—allergies; prescription and nonprescription
Lifestyle habits and attitudes: self health care, nutrition, socialization, dental status, safety, exercise, tobacco use, alcohol use
Social assessment—living situation, help with personal care, transport, contacts with others including pets and plant care, loneliness
Life changes
Financial status
Advance directives
Depression screening[6]

visit the nurse practitioner reviewed this questionnaire with the participant and obtained additional information about areas of concern. She then performed a function-oriented physical examination (Table 2), reviewed the outpatient chart, and ordered baseline laboratory tests (Table 2) if they had not been done in the last 6 months. Other tests were ordered as clinically indicated.

Table 2. The Senior Team Assessment and Referral Program Function-oriented Physical Examination.

Office Tests	Laboratory Tests*
Katz et al[7] Activities of Daily Living (ADL) Index	Complete blood count
Instrumental activities of daily living	Random blood glucose
Tinetti gait and balance[8]	Fecal occult blood
Audiometry and Hearing Handicap Inventory for the Elderly[9]	Mammogram
Vision screening	Thyroid studies
Folstein Mini-Mental State[10]	Total cholesterol
Blood pressure recordings—lying, sitting, and standing	Urine analysis
Inspection of ears, mouth, teeth, gums, feet, skin, and mucosal surfaces	
Examination of heart, lungs, and abdomen	
Rectal examination with prostate check for men, if not done in last 6 months	
Rectal and vaginal examination with Papanicolaou smear for women, if not done in last 6 months	
Discussion of preventive health care	
Answering patients' questions	

*Any or all were ordered if not done in the last 6 months.

The nurse practitioner presented each case to the STAR team, which consisted of a geriatrician, a health educator, and a geriatric psychiatrist, at a weekly team meeting where both the STAR and outpatient charts were reviewed. Case management telephone contacts and follow-up of recommendations and referrals from previous team meetings were also discussed. From this ongoing detailed review, a medical-functional profile was developed for each STAR participant. The components of the profile were medical-functional, medication, and social. The medical-functional component was made up of 14 items relating to health and disease as well as measures of function; the medication component consisted of 5 items that included a detailed review of prescription and nonprescription medicines, their utilization patterns and compliance, and alcohol and other substance use; the social component consisted of 8 items including those addressing issues associated with advanced age, isolation, and bereavement.

Each item was either a risk factor or a marker for frailty and was given a score, either 1, 2, or 3. The choice of risk factors and frailty markers and the assignation of numerical value to each was arrived at from a review of world geriatric literature and the combined clinical experience of the STAR investigators. If the participant was found to have one or more of these risk factors, the number assigned to it was entered on the participant's medical-functional profile grid (Figure 1). If the risk factor changed in any way, this change was documented on the grid throughout the study. The grid, developed by the STAR investigators, was easy to use and proved valuable in tracking changes in the participant's medical-functional profile during the 3 years of STAR.

The item scores were then added to produce a total score for each participant, which was entered at the bottom of the grid. A medical-functional profile total score of less than 3 indicated a low-risk or robust senior who had no need for case management or medical follow-up. These participants were seen again in 1 year at their next STAR visit. Medical-functional profile total scores of 3 or more indicated frail seniors whose item scores showed the areas in which they were at risk of deterioration. The higher the score, the more at risk the senior.

After completing the STAR evaluation for year

Name: J. Doe **Medical Record #:** XYZ123 **Personal MD:**

MEDICAL	Risk Points	Date 6/91	→ 8/91	→ 6/92	→ 9/92	→ 12/92	→ 6/93	→
Unstable disease	3	3	treated					
Clinically significant findings	3	3	stable					
Abnormal laboratory results: need follow-up	3							
Consultation	3	3	done					
Psychologic screening	3							
Screening for depression	3							
Specific senses impaired	2	vision 2	2	cataract surgery				
Malnutrition or failure to thrive	3							
Self-neglect	3							
Falls or injury risk	3							
Impaired mobility	2							
Post serious illness or hospital stay	3							
ADL or IADL deficiencies	2							
No personal health provider	1							
MEDICATIONS								
Polypharmacy: ≥ 4 medications	3							
Poor compliance	3							
Inappropriate drug use	3							
Alcohol or drug abuse	3							
Smoking	3							
SOCIAL								
Age, 80+ years	1	1	1	1	1	1	1	
Isolated	2							
Family problems	1							
Financial problems	2				2†	Family helped		
Impaired caregiver	2							
Patient as caregiver	2	2	2					
Recently bereaved	2			2*	2	2		
High-risk safety features	2							
TOTAL		14	5	3	5	3	1	
MFP CATEGORY		Frail	Frail	Frail	Frail	Frail	Robust	

ADL = activities of daily living; IADL = instrumental activities of daily living. *Wife died; referred to counseling; †referred to medical social worker.

Figure 1. Senior Team Assessment and Referral Program (STAR) medical-functional profile grid.

1, the team sent a detailed typed summary of findings and recommendations to participants and their primary health care provider. After the second and third evaluations in years 2 and 3, a letter describing new findings and recommendations since the previous visit was sent to each participant and physician.

Case management and follow-up activities were done, usually by telephone, for the frail group by the nurse practitioner and were accompanied by both STAR and outpatient chart review. The following topics were addressed at each contact:

1. Did they receive the letter summarizing their visit?
2. Did they understand the recommendations?
3. Had they complied with the recommendations?
4. What help or support had they needed to follow recommendations?

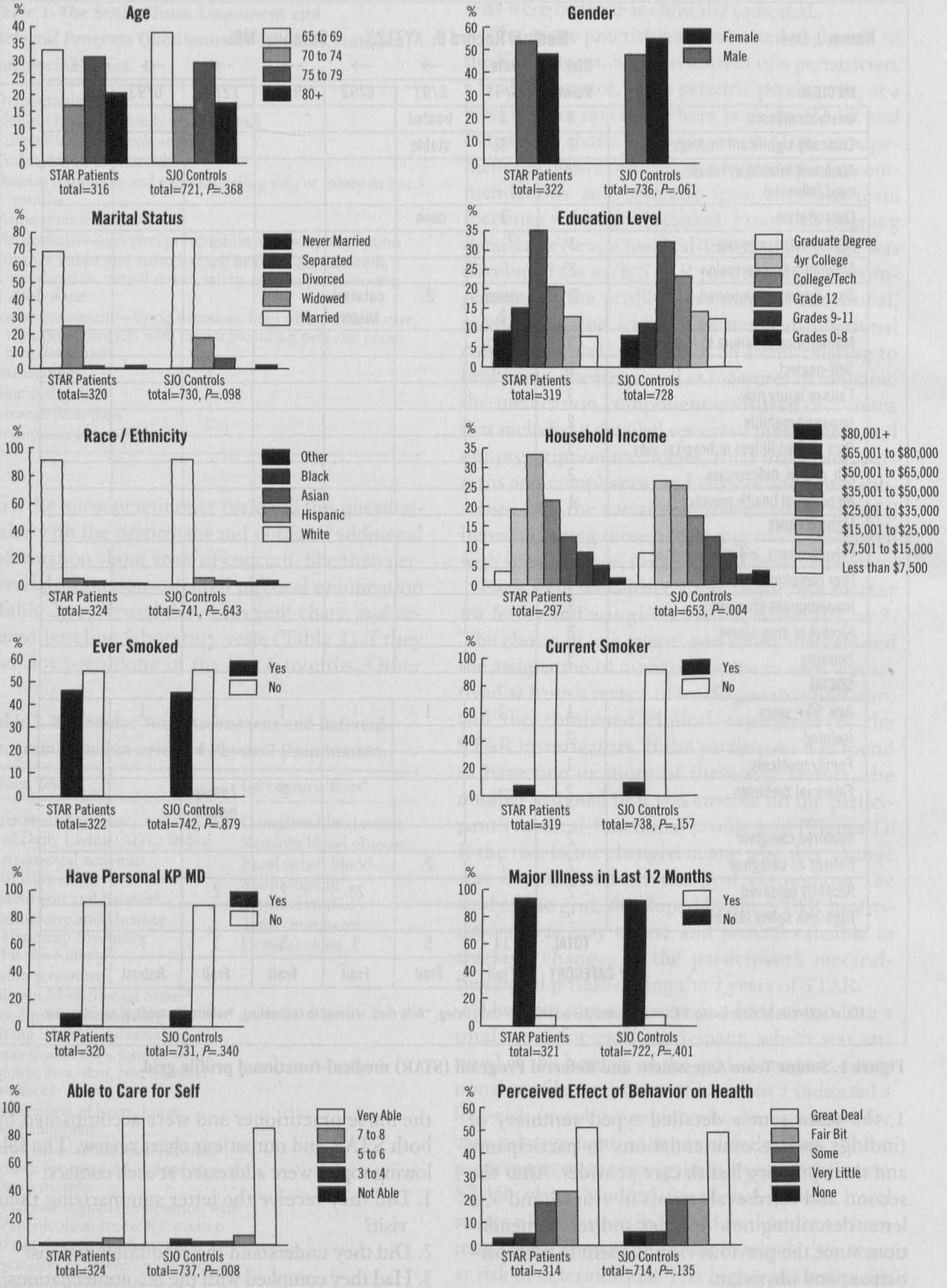

Figure 2. Baseline characteristics of Senior Team Assessment and Referral Program (STAR) participants and control group. SJO - San Jose, KP - Kaiser Permanente.

Table 3. Unadjusted Annualized Per-person Outpatient Visits, Hospital Admissions, and Hospital Stays of STAR Participants (n = 326) and San Jose Control Group (n = 764).

Encounter	Baseline Mean	Baseline SE*	Follow-up Mean†	Follow-up SE
Outpatient visits (no.)				
STAR participants	11.4	11.3	12.8	13.5
San Jose control group	11.2	7.1	10.9	10.2
Hospital admissions (no.)				
STAR participants	0.11	0.8	0.26	0.8
San Jose control group	0.24	0.4	0.31	0.7
Hospital stays (d)				
STAR participants	0.59	2.6	1.21	6.1
San Jose control group	1.58	4.8	1.55	5.8

STAR - Senior Team Assessment and Referral Program.
*SE - standard error.
†Follow-up means weighted on days enrolled in follow-up period.

Specific questions were asked about medication changes, visits to their own physician, results of consultations, and use of Kaiser Permanente and community resources. Each item entered on the medical-functional profile grid was reviewed by the nurse practitioner and discussed with the STAR participant as needed. All STAR participants, robust as well as frail, were encouraged to telephone the nurse practitioner with questions or concerns or when there was any change in their health, function, or social situation.

Referrals to the participant's attending physician or other health professional were made by direct contact or letter, depending on the need for urgency. Throughout STAR involvement, dialogue was ongoing among the STAR investigators, the nurse practitioner, and the participant's primary care physician.

Results

During the 3 years of STAR, 825 evaluations were completed: 326 participants completed evaluations in year 1, 281 participants completed evaluations in year 2, and by the end of year 3, 248 participants had completed all 3 STAR evaluations. Of the 78 who did not complete all 3 evaluations, 34 died, and the remaining 44 either left Kaiser Permanente or declined to continue.

Baseline characteristics for the participants and control group are shown in Figure 2. The STAR participants and control group were similar in 10 of the 12 domains. The control group, however, had lower incomes and rated themselves as less able to care for themselves.

Table 3 displays utilization data, which indicate that although STAR participants did not differ from the control group in their baseline outpatient visit patterns, they did have a 1.4 visit per year increase during the follow-up period. This finding was expected, because STAR evaluations, as well as medical office visits and referrals generated by the STAR, were included in this analysis.

The unadjusted number of hospital admissions per person per year was less frequent for STAR participants than for the control group during the baseline period (Table 3). It is possible that the STAR participants had fewer serious illnesses, a higher level of overall health, or both. An analysis using logistic regression[11] showed that the STAR group was approximately one half as likely (0.49 times) as the control group to be hospitalized during the baseline period, a highly significant difference ($P < 0.001$, 95 percent confidence interval [CI] 0.32, 0.74).

For duration of hospitalization, STAR participants had shorter stays, ranging from 0 to 23 days during the baseline period and 0 to 53 days during the follow-up period, compared with 0 to 118 days during the baseline period and 0 to 182 during the follow-up period for the control group. Mean length of stay in the STAR group also increased from baseline to follow-up period, which was not found for the control group. Even with this increase the STAR group had shorter hospital stays in the follow-up period.

The medical-functional profile grid (Figure 1) facilitated tracking health, functional, and social changes in the 248 participants who completed all 3 STAR evaluations.

In year 1, 136 of the 248 participants were clin-

Table 4. Life Changes Reported by Participants of Senior Team Assessment and Referral Program (STAR) (n = 229).

Life Changes	Percent
Personal	
Completed durable power of attorney for health care	56
Increased environmental safety measures, eg, grab bars, smoke alarms, seat belt use	52
Increased amount of regular exercise	49
Improved eating habits	42
Worry less about health	27
Worry much less about health	18
Changed living situation	10
Quit or reduced smoking, reduced alcohol consumption	<10
Medications	
Understand medicines better and how to take them	59
Improved change in way taking medicines	15
Self-efficacy	
More aware of how to improve or maintain health	89
Better prepared to ask questions of physicians	73
Felt able to take more active role in medical decision making	69
Community and other resources	
More aware of community and HMO resources to help maintain health and function	80
Contacted community agencies or HMO departments about support services or social activities	61
Contacted HMO health education department for more information about health, function, and social supports	17

HMO - health maintenance organization.

ically and functionally robust, 104 were frail, and 8 were sick. By year 2, 158 were robust, 90 were frail, and 0 were sick. Forty-five STAR participants who had been in the frail group in year 1 had improved to robust, and 2 of the sick had become robust. The remaining 6 in the sick category had died or left the study. By year 3 at the end of the study, 164 of the 248 elderly participants were robust, which represents a 20 percent increase in the number of robust elderly in the group.

When all three evaluations were completed, a satisfaction survey was sent to the STAR participants to assess the life changes that had resulted from the STAR evaluation and recommendations and satisfaction with the STAR project. The self-reported life changes from the 229 responses are listed in Table 4. Of note were increased safety measures (52 percent), completion of durable power of attorney for health care (56 percent), increased medication understanding (59 percent), and the STAR participants' perceived ability to participate more effectively in their own health care (69 percent).

The survey found that 93 percent of the respondents were either satisfied or very satisfied with their STAR experience. Table 5 shows the aspects of the STAR evaluation considered most valuable by participants. Time to discuss concerns and the "laying on of hands" by the health professional were most important to them.

A written survey of STAR participants halfway through the study showed that close to 100 percent found the STAR questionnaire easy to read, understand, and use. It took them on average 15 to 20 minutes to complete without help. In response to the question, "Are there changes you would like to see made in the questionnaire?" no changes were suggested.

After the first year of STAR, a satisfaction survey was sent to each STAR participant's primary care physician, asking them about the value of the program both to them and to their patients. Of the 72 percent who responded, 65 percent found STAR useful. Several physicians referred patients to STAR for case evaluation. These referred patients were not included in the study, because intake was limited to the first 12 months only and not by referral.

Discussion

Utilization of health resources for the STAR participants increased during the 3 years of the study. There are several reasons for this increase.

1. STAR evaluation outpatient visits were included in this analysis.
2. Consultations and referrals arranged by the STAR team generated outpatient visits for evaluation and treatment of clinical findings and diagnoses, particularly in the areas of dermatology, optometry, and physical therapy.
3. New cancers were detected, which increased both inpatient and outpatient resource utilization.
4. Elective surgical procedures, for example, cataract extraction or knee and hip joint replacement, occurred in response to advocacy for improved function by the STAR team.
5. Some STAR participants reported that their increased knowledge about normal aging, signs of disease, and medication effects generated visits to primary care providers.

The new diagnoses made and the findings observed during STAR, as well as specific reasons for participants' improvement from frail to

robust, will be reviewed in more detail.

The number of hospital days for STAR participants rose during the course of the study but remained fewer than for the control group. Early diagnosis and prompt treatment of disease can increase use of less-expensive short-term health resources but preserve health, improve function, and reduce costs over the longer term. Costing out hospital days using diagnosis-related groups will be reviewed.

Hospital stays were shorter for the STAR group than for the control group during the follow-up period. This finding would suggest less serious illnesses, earlier diagnosis as a result of STAR interventions, or better health at baseline.

The increase in resource utilization during the 3-year period could also represent regression to the mean for this overall healthy study group. If STAR participants were compared with the control group for an additional 10 years without any further STAR evaluations, a longer term decrease in utilization and costs in the STAR group would be likely because of the early diagnoses already made, therapies and interventions already completed during the study, and improved self-efficacy. If yearly STAR evaluations were carried out for the next 10 years, progression to frailty in the robust group would continue to be detected, and resulting timely interventions could decrease utilization. This issue merits further study.

The original regional baseline questionnaire was sent randomly and had a high return rate. The randomly chosen STAR participants represent a reasonable sample of ambulatory elderly Kaiser members. Although the participants were drawn from an HMO population, the results of STAR can be applied to a non-HMO population, as HMO and non-HMO populations have been found to be similar.[12] Elderly Kaiser Permanente members who were too ill to fill out the questionnaire or to come to the medical office for evaluation were unable to participate in STAR.

The study group selection process during the first 12 months was not designed to target the frail elderly, but the STAR evaluations, medical-functional profile tracking, and case management during the 3 years of the study were. As a result of these interventions, 79 frail elderly moved into the robust elderly category. Other studies[1,3,4] have shown that the earlier frail patients' need for help is addressed, the more morbidity and long-term medical care costs are decreased. Early intervention also improves quality of life and allows independence to be maintained longer.

Table 5. Percentage of Senior Team Assessment and Referral Program (STAR) Participants Who Considered the Following Components Valuable (n = 229).

Component	Percent
Opportunity to discuss concerns with the nurse practitioner	82
Physical examination	80
Getting STAR summary report	66
Laboratory tests	60
Memory test (Folstein Mini-Mental State)	60
Immunization update	58
Detailed medication review	58
Assessment of ability to do daily tasks	53
Discussion of eating habits	37
Discussion of accident prevention	24
Discussion of foot problems	22
Discussion of alcohol, tobacco use, and sexuality	<20

Determining which items are most important for health and function warrants investigation, and those items in the medical-functional profile that were improved most by the team's recommendations require further analysis and validation. Although the individual items contributing to the medical-functional profile were based on objective, validated measures that were part of the evaluation, the validity of the aggregate score should be evaluated further. The multicomponent medical-functional profile and grid developed for STAR was easy to use, and could be incorporated into any inpatient or outpatient geriatric evaluation.

The self-reported changes in health behaviors and attitudes that occurred in the STAR group could have positive long-term effects on morbidity, functional awareness, and health resource utilization in both robust and frail seniors.[13] Follow-up is needed to determine whether these changes in attitudes and behavior will persist, with or without reinforcement, and whether they will affect future health and functional outcomes and use of health resources.

The nurse practitioner discussed setting up a durable power of attorney for health care with STAR participants. She answered questions and encouraged them to think in advance about the measures they would want taken in the event of their serious illness, coma, or death. Information was sought by STAR participants about enteral feeding, intravenous fluids at the end of life, ven-

tilators, and cardiopulmonary resuscitation.

The participants' satisfaction surveys confirm that when patients at any age are encouraged to ask questions and be heard, they are more satisfied with their medical care.[14,15] In STAR, the 90-minute evaluation by a midlevel provider gave adequate opportunity for this type of communication. The participants had high praise for such interaction and the detailed physical examination carried out by the nurse practitioner.

The STAR model could be used in a primary care physician's office practice. By being integrated into the practice, rather than offered as a consultation service, this model could produce even more effective outcomes. Analyses of geriatric assessments indicate that programs which have control over recommendations and extended ambulatory follow-up are more likely to be effective.[2]

Most of the STAR participants' primary care physicians confirmed that the STAR evaluations were useful to them and their patients and integrated the findings and recommendations into their delivery of care.

Summary

The less time- and staff-intensive, but comprehensive STAR model of geriatric assessment did not result in decreased utilization of resources in the short term, but it did accomplish the following:

1. It effectively established a health and functional baseline for each participant at the first visit.
2. It detected and tracked changes in health or function at subsequent visits.
3. It singled out the frail elderly and those robust elderly who were at risk of becoming frail, and instituted measures that prevented or ameliorated deterioration in health and function.
4. It improved health and function in the participants.
5. It helped the robust remain that way by improving self-efficacy, health, and safety behaviors.
6. It provided a useful health appraisal adjunct for the patient's primary care physician.
7. It developed a model that would be easy to use in the primary care office setting.

Ellen Hvistendahl, BSN, RN, FNP-C, and Joyce Tobias, RN, PA-C, FNP-C, carried out the STAR evaluations; Peggy Kotoske, medical assistant, performed the medical office duties throughout the evaluation; and Owen M. Lum, MD, a geriatric psychiatrist, consulted at STAR team meetings. Leo B. Hurley, MPH, Kathleen E. Martin, and Nancy Gordon, ScD, provided research assistance. Axylotl Images provided graphics.

References

1. Campion EW. The value of geriatric interventions. N Engl J Med 1995;332:1376-8.
2. Stuck AE, Siu AL, Wieland GD, Adams J, Rubenstein LZ. Comprehensive geriatric assessment: a meta-analysis of controlled trials. Lancet 1993;342:1032-6.
3. Rubenstein LZ, Stuck AE, Siu AL, Wieland D. Impacts of geriatric evaluation and management programs on defined outcomes: overview of the evidence. J Am Geriatr Soc 1991;39(9 Pt 2):8S-16S.
4. Hendriksen C, Lund E, Stromgard E. Consequences of assessment and intervention among elderly people: a three year randomised controlled trial. Br Med J Clin Res Ed 1984;289:1522-4.
5. Rubenstein RS, Lohr K. Vision impairment. In: Rand health insurance study. Conceptualization and measurement of physiologic health for adults, volume 12. Santa Monica, Calif: Rand Corporation, 1982.
6. Brink TL, Yesavage JA, Lum O, Heersema PH, Adey M, Rose TL. Screening tests for geriatric depression. Clin Gerontol 1982;1:37.
7. Katz S, Downs TD, Cash HR, Grotz RC. Progress in the development of the index of ADL. Gerontologist 1970;10:20-30.
8. Tinetti ME. Performance-oriented assessment of mobility problems in elderly patients. J Am Geriatr Soc 1986;34:119-26.
9. Ventry IM, Weinstein B. The hearing handicap inventory for the elderly: a new tool. Ear Hear 1982:3:128-34.
10. Folstein MF, Folstein SE, McHugh PR. Mini-mental state: a practical method for grading the cognitive state of patients for the clinician. J Psychiatr Res 1975;12:189-98.
11. SAS/STAT software: Changes and enhancements through release 6.11. Cary, NC: SAS Institute, 1996.
12. Krieger N. Overcoming the absence of socioeconomic data in medical records: validation and application of a census-based methodology. Am J Public Health 1992;82:703-10.
13. Anderson WF. Is health education for the middle-aged and elderly a waste of time? Fam Community Health 1981;3(4):1-10.
14. Hall JA, Dornan MC. What patients like about their medical care and how often they are asked: a meta-analysis of the satisfaction literature. Soc Sci Med 1988;27:935-9.
15. Hall JA, Dornan MC. Meta-analysis of satisfaction with medical care: description of research domain and analysis of overall satisfaction levels. Soc Sci Med 1988;27:637-44.