Evaluation Results for the Social/Health Maintenance Organization II Demonstration

Tommy G. Thompson
Secretary of Health and Human Services
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Executive Summary

The two demonstrations described in the attached reports [the report on the ESRD demonstration is available at http://www.cms.hhs.gov/researchers/reports/2002/execsum.pdf] tested new approaches for providing care, under capitated payment models, to patients with special needs. These two managed care demonstrations provided targeted Medicare beneficiaries with additional services not routinely covered by Medicare HMOs. The second generation Social/Health Maintenance Organizations (S/HMO IIs) targeted frail, medically complex patients at risk of nursing home placement. The End-Stage Renal Disease (ESRD) demonstration enrolled patients with end-stage renal failure, who are currently prohibited from enrolling in managed care plans after the onset of kidney failure. Typical services in the S/HMO II demonstration include case management, personal attendant care, transportation, day care, prepared meals, respite care, and social services. The precise services provided to an individual patient in the S/HMO II demonstration were determined in an assessment of the patient's medical and social needs. In contrast, the ESRD demonstration sites offered benefits important to dialysis and transplant patients, such as no copayments on pharmaceuticals, nutritional supplements, free transportation to the dialysis facility, dental care, and rehabilitative and preventive care.

Legislative History

The Deficit Reduction Act of 1984 (P.L. 98-369, Section 2355) mandated a demonstration of the S/HMO concept and submission of the attached final report to Congress. Submission of the report was originally to be 45 months following the enactment of the Deficit Reduction Act. However, each of the pieces of legislation described below extended the life of the demonstration and deferred the submission of the final report.

A demonstration of a second generation (S/HMO II) model was authorized in the Omnibus Budget Reconciliation Act of 1990 (P.L. 101-508, Section 4207). The legislative guidelines for the second generation model were based on findings from the evaluation of the first generation S/HMO. The Omnibus Budget Reconciliation Act of 1993 (P.L. 103-66, Section 5079) increased the enrollment limit of the S/HMO demonstration and allowed for a new demonstration under the S/HMO authority for beneficiaries with ESRD. The Balanced Budget Act of 1997 (P.L. 105-33, Section 4014) required a report, submitted to Congress on February 1, 2001, on integration and transition of the S/HMO into the Medicare + Choice (M+C) program. The Medicare, Medicaid, and SCHIP Balanced Budget Refinement Act of 1999 (P.L. 106-113, Section 531) extended the demonstration and changed the submission for the attached reports to 21 months after the submission of the transition report. The Medicare, Medicaid, and SCHIP Benefits Improvement and Protection Act of 2000 (P.L. 106-554, Section 631) extended the demonstrations of both generations of social health maintenance organizations from 18 months to 30 months following the submission of the transition report.

The following discussion includes two self-contained sections on the S/HMO II and ESRD evaluations that can be read independently. While there is no explicit requirement of a report to Congress concerning the ESRD Demonstration, the demonstration is authorized in the section relating to S/HMOs. Therefore, the results of the ESRD evaluation are being included as a separate section of the final S/HMO report to Congress.

PART 1: EVALUATION RESULTS FROM THE S/HMO II DEMONSTRATION

Background

Although not more than four additional projects were authorized by Congress, only one S/HMO II plan was actually implemented. Started in late 1996 by the Health Plan of Nevada (HPN), this plan, Senior Dimensions, is still in operation. The evaluation examined the effects of the S/HMO II on the health and functioning, service use, and quality of care of its members from July 1997 through April 1999.

The second generation S/HMO incorporated many features of the first generation model but added modifications suggested by findings from the evaluation of the first generation S/HMOs. Both models are designed to supplement the basic services of a Medicare HMO with additional services and benefits for selected enrollees. Under both models, beneficiaries receive systematic screening assessments at enrollment and every 12 months thereafter. Members who appear to be at medical risk undergo an additional, more extensive, in-person assessment by case managers to determine what, if any, extra services they require. Distinctions between first and second generation S/HMOs include differences in the payment design, in the method for targeting patients, and in the additional focus in S/HMO II on interdisciplinary teams to manage care.

The S/HMO II model also incorporates a more team-oriented geriatric approach to care compared to the first generation model. It brings together primary care physicians, specialists, pharmacists, dieticians, geriatricians, and nurse case managers in an interdisciplinary care coordination team to fully integrate acute and long-term care services. Examples include annual screening of members for risk factors, formulary restrictions that discourage use of drugs found harmful among older people, personal care, transportation, emergency response systems, respite care, and other services for at-risk members.

S/HMOs are capitated and accept risk for their members, just like Medicare risk plans. Payments are based on the Medicare county rate book amount for risk plans but without the implicit 5 percent discount that is built into the risk-plan rates. The augmented rate is intended to cover the expanded community care and care coordination S/HMOs provide.

Payments are risk-adjusted for both S/HMO I and S/HMO II plans but using different approaches. The S/HMO I plans receive higher payments for enrollees who are nursing home certifiable and lower payments for enrollees who are not. The resulting payments were 15 percent to 30 percent higher than standard Medicare HMO's would have received for the same enrollees. These higher payments are surprising in that there is little difference in case-mix between the S/HMO and local risk plans. This finding suggests that many of the enrollees classified as nursing home certifiable may not be highly impaired. Payments to the S/HMO II plan are based on a more complex risk adjustment formula that incorporates multiple variables derived from the health and functional status assessments of each enrollee. The S/HMO II methodology resulted in payments that were only 5 percent higher than the payments that would have been made to a regular Medicare HMO, which is consistent with the project's payment structure.

This report evaluates the effect of the S/HMO II in terms of three basic measures of plan performance: (1) changes in enrollee health and functional status, (2) utilization of services, and (3) quality of care. In addition to these measures, the evaluation examined the extent to which enrollees in the S/HMO II plan received additional services and benefits that are not standard Medicare benefits.

Findings

S/HMO II effects on utilization were modest, except for a small high-risk group.

S/HMO II members used more physician care and were more likely to use skilled nursing facility and home health care than were members of the traditional risk plan. There was no clear evidence that the S/HMO II reduced the rate of hospitalization in the overall study population. There did appear to be a significant reduction in hospital admissions in a very small sub-group of patients with histories of multiple prior hospitalizations. The evaluation found no effect of the S/HMO II on the probability of admission to a custodial nursing home stay although the small number of such admissions in both groups made detection of an effect very difficult.

There was no consistent evidence that the S/HMO improved health or functional status relative to HPN's Medicare risk plan.

The evaluation used 39 measures of self-reported health and functional status, including impairment in activities of daily living and in instrumental activities of daily living. Generally, there were few statistically significant effects noted. Although there were some modest indications of positive S/HMO II effects on performance of certain IADL functions such as meal preparation, housework, and management of finances, these trends were far too weak to conclude that S/HMO II members were better off than they would have been had they not joined the S/HMO II. Moreover, findings suggestive of a positive impact were offset by indications that the S/HMO II may have performed less effectively than the comparison groups in other areas such as self-reported improvement in health.

The quality of care provided by the S/HMO II was not clearly superior to that provided to other beneficiaries in the Southwestern United States.

Quality of care was assessed by examining the provision of routine preventive care, frequency of physician visits for persons with specified chronic conditions, and rates of hospitalization for enrollees with potentially avoidable hospital conditions. Overall, there was no evidence that the quality of care provided to S/HMO II enrollees was consistently better than care received by enrollees in other Medicare HMO's or by Medicare beneficiaries using traditional Medicare fee-for-service coverage.

Conclusion

There was no convincing evidence that outcomes for S/HMO II enrollees overall were better or worse than they would have been had the enrollees not participated in the S/HMO II. The only clear evidence of a possible effect was a reduction in hospital utilization in a very small sub-group of high-risk enrollees who had been hospitalized more than once before enrollment in S/HMO II. While these findings suggest that the S/HMO II model was ineffective, other factors may have contributed to the lack of significant findings. For example, the evaluation period may have been too short to demonstrate positive effects. It is also possible that S/HMO II services were directed at too broad a population and were not sufficiently focused on Medicare enrollees who would have benefited most.

Finally, study of the S/HMO model at additional sites would have been helpful in demonstrating any effects of the S/HMO II program. Although the demonstration was designed for not more than four additional projects, only one of the plans that were selected to participate actually implemented the program. As a result, the evaluation was limited to a single plan, an insufficient basis for reliable inferences about the effectiveness of the S/HMO II model.

PART 2: EVALUATION RESULTS FROM THE ESRD MANAGED CARE DEMONSTRATION.

Background

ESRD, or total kidney failure is fatal, unless the person is treated by dialysis, which artificially replaces the functions of the kidney, or kidney transplantation. Even with treatment, the health status of ESRD patients is diminished: the average hemodialysis patient spends approximately 14 days in the hospital and is prescribed about eight medications per year. Year-at-risk spending for all medical care (not just Medicare covered services) is more than $65,000 per hemodialysis patient. In the 1972 Amendments to the Social Security Act (P.L. 92-603, Section 2991), Congress extended full Medicare coverage to persons with ESRD, subject to minimal Social Security requirements, regardless of their age.

Under the Tax Equity and Fiscal Responsibility Act of 1982, Medicare beneficiaries with ESRD are not permitted to enroll in HMOs unless they were enrolled in an HMO prior to the onset of ESRD. The Omnibus Budget Reconciliation Act of 1993, as one of the modifications in the S/HMO section, required CMS to conduct a managed care demonstration project for end-stage renal disease patients. In 1996 CMS launched the ESRD Managed Care Demonstration to study the experience of offering a managed care option to Medicare ESRD patients. The intent was to see whether extension of an integrated system of care to ESRD beneficiaries was operationally feasible, efficient, and, most importantly, able to produce health outcomes as good as the current fee-for-service (FFS) system.

The demonstration was intended to test the feasibility and effectiveness of the following:

- Permitting year-round enrollment and disenrollment options for ESRD beneficiaries to enroll in participating HMOs;
- ESRD-focused case management, with particular emphasis on improved outcomes of care;

- Preventive and supportive interventions and more comprehensive benefit coverage for ESRD patients; and,
- An ESRD payment and risk adjustment method specific to ESRD patients that, among other factors, incorporated cause of renal failure and treatment modality (dialysis or transplant).

The evaluation of the demonstration assessed many quality of care indicators, process measures and final outcomes for patients with comparison groups from randomly selected facilities and patients in the same state. The findings in the Report to Congress are summarized below.

Findings

Enrollee Characteristics:

- Beneficiaries who enrolled in the demonstration were younger, more likely to be male, of white race and had fewer co-morbid conditions, especially cardiovascular diseases.

Quality of Care and Outcome Indicators:

- Demonstration patients' survival was the same as or better than comparison patients, even after adjustment for demonstration patients' healthier status (although some unmeasured differences in health status may still exist).
- Hospitalization levels, after adjustment for patient differences, were similar in the demonstration and comparison groups.
- Clinical indicators in the demonstration patients, such as anemia management, dialysis adequacy, and vascular access rates, were the same as or better than comparison patients.
- Access to transplantation (as defined by being listed on a transplant waiting list and by likelihood of receiving a transplant) among beneficiaries at the Florida demonstration site (where the contracted transplant provider was 300 miles away) was substantially lower than such access among fee-for-service patients. The California site, which contracted with three local transplant centers, had transplantation rates indistinguishable from the comparison patients.

Patient Satisfaction and Quality of Care:

- Satisfaction levels with providers were high among patients in both Demonstration and FFS groups. However, demonstration patients indicated higher satisfaction with health plan benefits.
- When contrasted with patients in the comparison groups, demonstration patients experienced some improvement in quality of life, particularly in mental well being.

Costs:

- Government expenditures for demonstration patients were higher than expenditures would have been if they had remained in FFS Medicare. The demonstrations' risk adjustment formula did not adequately compensate for the younger and healthier enrollees.
- Demonstration sites experienced financial losses (HOI) or only small gains (Kaiser). This finding should be viewed in the context of the rich benefit packages available in 1995 that the sites maintained throughout the demonstration.

- Medicare beneficiaries who enrolled reported much lower out-of-pocket medical expenses than under traditional FFS Medicare.

Conclusions:

Qualitatively, compared to ESRD beneficiaries in traditional FFS Medicare, the evaluation suggests that enrolling ESRD beneficiaries in the demonstration plans produced results similar to those that other studies have found from enrolling aged or disabled beneficiaries in M+C plans. First, younger, more male, and healthier patients chose to enroll. Quality of care and patient outcomes were similar to, and occasionally better than, FFS comparison groups after adjustment for differences in demographic characteristics and health status factors. Medicare payments to both the demonstration and M+C plans were higher than payments to FFS providers would have been because the younger and healthier enrollees required less medical care than the average comparison group beneficiary. Finally, both demonstration and Medicare M+C enrollees report satisfaction with access to care and quality of care under their plan. Demonstration patients report lower out of pocket expenses than under traditional FFS Medicare.

I. HISTORY OF THE S/HMO DEMONSTRATION

Social health maintenance organizations (S/HMOs) combine the features of a Medicare risk plan with those of a modest long-term-care community insurance plan. S/HMOs have been operating as demonstration plans since 1985. In addition to providing regular Medicare-covered medical services, these HMOs offer care coordination and expanded home- and community-based long-term care benefits to their frail elderly members and receive an augmented capitation payment rate relative to the Medicare risk plan rate to cover those services. By offering coverage for home- and community-based services, S/HMOs might enable frail beneficiaries to remain in the community and reduce their need for expensive medical services.

An earlier report[1], often referred to as the "transition report" was delivered to Congress on February 1, 2001. This report included recommendations on how to transition the S/HMO demonstration into the Medicare + Choice (M + C) program. The present report presents the final results of the evaluation of the Second Generation S/HMO demonstration.

[1] This report, titled "Social Health Maintenance Organizations: Transition into Medicare + Choice," was transmitted to Congress on February 1, 2001.

A. ORIGINS AND GOALS

A number of demonstration projects were designed and implemented during the 1980s and 1990s, each with the aim of helping frail elders maintain their health, prevent accidents, and delay medical problems in order to reduce complications that would result in hospital stays or nursing home placements. Frail elders have complex medical and health-related needs resulting from chronic diseases, functional limitations, polypharmacy, limited incomes, and social isolation that place them at risk of medical complications (such as falls and adverse drug reactions) that can result in potentially avoidable hospital stays and long-term nursing home placements. The demonstration programs developed to respond to these problems have included coordination of community-based services, integration of acute and long-term care through consideration of the need for both medical and social services, and the inclusion of geriatric approaches in medical care that focus on the needs of elders. The S/HMO demonstration and other programs for frail elderly Medicare beneficiaries, such as the Program of All-Inclusive Care for the Elderly (PACE), On-Lok, the precursor of PACE, and the National Long Term Care Channeling demonstration, used approaches such as these to address many of the same problems among frail elderly people.[2] PACE has now become an option under Medicare + Choice. A recent evaluation concluded that PACE substantially lowered the risk of hospital or nursing home admission during the first year of enrollment (Chatterji et al. 1998).

The early S/HMO model grew out of an initiative supported by the Robert Wood Johnson Foundation and was intended to increase attention to and resources for frail elderly people needing long-term care, including social care. Congress authorized the S/HMO I demonstration in the 1984 Deficit Reduction Act (P.L. 98-369, Section 2355). The Centers for Medicare and Medicaid Services (CMS) approved four demonstration sites in 1985: Elderplan (in Brooklyn, New York); Medicare Plus II, later known as Senior Advantage II, operated by Kaiser (in Portland, Oregon); Senior Care Action Network (SCAN) (in Long Beach, California); and Seniors Plus (in Minneapolis, Minnesota). Seniors Plus closed in 1995; the other three sites remained in operation as of July, 2002.[3]

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[2]On-Lok, which began in San Francisco in 1972, was replicated in nine sites as PACE. PACE is open to people who meet state nursing home admission criteria. It offers a comprehensive array of acute and long-term care services, such as day care, nursing home care, home care, prescription drugs, and restorative therapies, that are substantially more extensive than the services available in the S/HMO sites. PACE currently operates in 24 sites in addition to the original On-Lok site, and is now a permanent part of the Medicare + Choice program. Channeling was a demonstration program in 10 sites that provided management of community care services for a population screened and found to be at risk of nursing home placement. The goal of this program was to help frail elders remain in the community rather than enter nursing homes.

[3]Seniors Plus in Minneapolis-St. Paul, Minnesota closed in January 1995 because of sustained and substantial losses continuing over several years (Fischer et al. 1998).

In 1990[4], based on the findings from an evaluation of the S/HMO I demonstration conducted from 1985-1989, Congress authorized an expansion of the S/HMO I demonstration. The same legislation called for a new demonstration to test a second generation Social HMO (S/HMO II) model that would incorporate changes and improvements suggested by the S/HMO I evaluation. The S/HMO II model called for a new payment methodology and sites were to bear full financial risk for the care of their enrollees, a significant departure from the risk-sharing arrangement that plans had with CMS in the early years of the S/HMO I model. Of the six sites that received S/HMO II developmental grants, only one became operational - a site sponsored by the Health Plan of Nevada (HPN). The other five prospective sponsors withdrew, some citing financial reasons, including a reluctance to assume the risk of an untested payment method. Other plans cited a lack of infrastructure needed to implement a site (particularly among the rural plans), and loss of personnel who had developed the initiatives.

The first generation S/HMO sites were also offered the option to convert to S/HMO II sites but after considering the requirements for the S/HMO II model, none decided to convert.

B. THE S/HMO I AND S/HMO II MODELS

The Social HMO is a demonstration project that assumes full financial risk for its Medicare members. The S/HMO's differ from other Medicare + Choice plans in several important ways:

- They provide systematic, periodic screening and assessment of all enrollees to identify frail elders in need of special services;
- They provide care coordination services;
- They provide an expanded package of benefits and services; and,
- They are paid in a different manner than M+C plans.

S/HMO I and S/HMO II model sites differ in the way these features are implemented. Table I.1 contrasts payment and eligibility for S/HMO I and S/HMO II plans and gives a brief description of the services provided by the programs. Features of the PACE program are included for comparison. The expanded benefits provided by the S/HMOs will be described in greater detail in Chapter II.

TABLE I.1
COMPARISON OF S/HMO I, S/HMO II, AND PACE CHARACTERISTICS

Program Characteristics	PACE*	S/HMO I	S/HMO II
Eligibility	Age 55 or older and Nursing Home Certifiable (NHC)	All Medicare beneficiaries age 65 or older	All Medicare beneficiaries
Targeting	All members receive special services	NHC beneficiaries receive extra services	Risk factors used to determine which beneficiaries get special services
Payment	2.39 times M+C rate for locality.	100% AAPCC (vs. 95% of AAPCC for regular M+C plan). Separate rate cells for NHC and community residents.	Health and functional status determine payment using formula

[4] (P.L. 101-508, Section 4207(b)(4)(B))

Services	Assessment by multi-disciplinary team; social services, personal care, supportive services; nutritional counseling, recreational therapy, and meals, provided at the PACE Center; drugs and biologicals; nursing facility care; custodial care; transportation; home care liaison.	Screening for risk factors; transportation; personal care; emergency response; in-home respite care; drugs and biologicals; and other site-specific services†	Screening for risk factors; transportation; personal care; homemaker services; home-delivered meals; nutritional supplements; home safety equipment; in-home respite care; drugs and biologicals; adult day respite care; and short-term group home care.

† Services offered at some but not all S/HMO I sites include homemaker services, home delivered meals, nutritional supplements, equipment and supplies, counseling for situational disorders, maintenance therapy, adult day respite care, medication management, short-term group home care, and short-term nursing home care.

*S/HMO I and S/HMO II plans are Medicare-only programs. PACE provides services that are covered by both Medicare and Medicaid.

S/HMO I: The S/HMO I model identifies enrollees who are nursing home certifiable (NHC) according to state-specific criteria and targets them for care coordination and expanded community care benefits. Elderly people who are deemed eligible for care coordination on the basis of the NHC criteria can also receive any of the special S/HMO services offered, such as personal care and transportation.

Payments to S/HMO sites are tied to the same payment base as regular M+C plans except that the S/HMO payments are 5 percent higher than the base used for regular M+C plans. The extra reimbursement is intended to pay for the expanded home- and community-based long-term care services and care coordination the S/HMOs are required to offer. Furthermore, the S/HMO I approach incorporates different payment factors for individual members than are used for the Medicare risk plans. Under the S/HMO I payment formula, the Medicare base rates for beneficiaries living in the community are split into nursing home certifiable and not nursing home certifiable. The base rates for the people who are nursing home certifiable are much higher than for enrollees in regular Medicare risk plans, and the base rates for the people who are not nursing home certifiable are substantially lower. The aim of the payment factor modifications is to ensure adequate risk adjustment for the particularly high medical care needs of the group targeted as nursing home certifiable while ensuring neutrality with respect to overall Medicare payments over the entire S/HMO plan membership.

Wooldridge et al. (2001), using data from October 1998, found that payments to the three S/HMO I sites were 15 to 30 percent higher than they would have been under Medicare risk contracting. These higher payments are surprising because there was little difference in case-mix between the S/HMO and local risk plans. This finding suggests that many of the enrollees classified as nursing home certifiable may not be highly impaired.

S/HMO II: The S/HMO II model was designed to emphasize geriatric approaches and care coordination across the entire spectrum of enrollees who required such services, rather than limit

these special services to a targeted subgroup of enrollees.[5] As a result, the concept of nursing home certifiability was dropped. Furthermore, to support this shift in emphasis, the payment system for S/HMO II was modified substantially.

THE GERIATRIC EMPHASIS WAS REINFORCED THROUGH THE USE OF SPECIAL ELDERLY PROTOCOLS AND THROUGH CMS'S REQUIREMENTS FOR STAFF GERIATRICIANS AT EACH S/HMO II SITE TO COORDINATE AND OVERSEE THE CARE OF FRAIL OLDER PERSONS. LIKEWISE, CARE COORDINATION FORMS AND PROTOCOLS WERE DEVELOPED. CMS ALSO PROVIDED TECHNICAL ASSISTANCE IN THE DEVELOPMENT OF MANAGEMENT INFORMATION SYSTEMS TO COORDINATE INFORMATION TRANSFER AMONG ALL THOSE INVOLVED IN PROVIDING CARE.

The S/HMO II payment model replaces the NHC concept with a payment formula based on each beneficiary's health status. A third party contractor collects health status information for each member in an annual survey. This health information is used, along with demographic factors, to calculate a multiplier (or risk-adjuster) that is applied to the base rate used by regular Medicare risk plans (augmented by 5 percent as was done with the S/HMO I plans). The multiplier is designed to increase payments as the medical complexity of beneficiaries increases.

The augmented payment is intended to support the additional care coordination and community care benefits and the risk adjustment multiplier is intended to reflect the medical care needs of enrollees. Wooldridge et al. (2001) compared payments made to the S/HMO II plans for October, 1998 with simulated payments that would have been made to regular M+C plans for the same patient population. They found that the S/HMO II payment methodology was resulted in a monthly payment that was $577,646 (4.9 percent) higher than the simulated payment to a regular Medicare risk plan. This would amount to $6,931,752 on an annual basis.

[5]Geriatric approaches to care include the use of geriatricians and geriatric nurse practitioners in a team approach that offers evaluation and assessment. Geriatric approaches also include but are not limited to the following: prevention and health maintenance, continuity of care across settings, use of protocols for managing geriatric syndromes, medication management, facilitated access to the primary care practitioner or nurse practitioner, attention to advance directives, special hospital units for elderly patients, attention to geriatric mental health problems, and primary care for long-term nursing home residents. To be effective these approaches have to be disseminated among primary care physicians throughout an HMO's network.

C. CURRENT DEMONSTRATION STATUS

AS OF FEBRUARY 2002, THREE S/HMO MODEL I DEMONSTRATION PLANS - ELDERPLAN, SENIOR ADVANTAGE II OPERATED BY KAISER, AND SCAN - WERE OPERATING. THEIR ENROLLMENTS ARE SHOWN IN TABLE I.2. THE SOLE S/HMO II PLAN IS SENIOR DIMENSIONS, FORMED IN 1996 BY HPN, WHICH ALREADY OPERATED A MEDICARE RISK PLAN. SENIOR DIMENSIONS ENROLLMENT WAS 39,152 AS OF FEBRUARY 2002.

TABLE I.2
S/HMO I DEMONSTRATION SITES, 2002

	Elderplan	Senior Advantage II, Kaiser Permanente NW	SCAN Health Plan
Location	Brooklyn, NY	Portland, OR	Long Beach, CA
Membership (February, 2002)	9,706	4,234	51,599

D. RESULTS OF EARLIER EVALUATIONS AND ANALYSES

The evaluation of the first-generation S/HMOs found that S/HMO I enrollees with medical conditions similar to those of fee-for-service Medicare beneficiaries had higher nursing home and home care costs and lower hospital costs than the fee-for-service group (Newcomer et al. 1995a).[6] S/HMO I participants with impairments exhibited higher mortality and lower reported satisfaction with almost all aspects of care than did fee-for-service beneficiaries (Manton et al. 1993, 1994; Newcomer et al. 1996). Although the S/HMO administrators have argued that these results were an artifact of the evaluation design, the results suggest that the S/HMOs did not have the expected favorable impacts on clients (Leutz et al. 1995; Newcomer et al. 1995b). Later analysis of the Consumer Assessment of Health Plans Study (CAHPS), found no evidence of greater satisfaction among members of S/HMO I plans than among members of other local risk plans (Wooldridge et al., 2001).

The S/HMO I evaluation also found that the demonstration had not integrated acute and long-term care in the way the designers had intended. Because coordination between S/HMO care coordinators (typically social workers) and physicians was poorly developed, evaluators proposed stronger geriatric approaches that would involve physicians in care coordination (Harrington et al. 1993).

[6]The S/HMO I demonstration plans were evaluated relative to the fee-for-service sector, using data collected from the early operational period (1985 to 1989).

E. S/HMO II EVALUATION DESIGN

Prior to the demonstration, HPN was already operating as a TEFRA[7] HMO in the Las Vegas area and delivering care through a network of over 20 primary care sites. The basic evaluation strategy for the demonstration was to designate some of these primary care sites as S/HMO II sites and to use the remaining sites for a comparison group. The primary care sites chosen to implement the S/HMO II care delivery model did so during the months of November and December of 1996 and at the end of this period, the roughly 20,000 beneficiaries at these sites were eligible to receive care under the S/HMO II model[8]. In order to minimize post-assignment migration of enrollees from comparison group sites to S/HMO sites, HPN agreed not to market or publicize the S/HMO II program. Although members of the S/HMO II and HPN risk plans proved to be broadly similar, some differences in the two populations were found, as will be seen in Chapter V. The most significant difference between the two groups was that at the time of the initial assignment in late 1996, all 398 enrollees who were in nursing homes were assigned to S/HMO II sites.

The evaluation measures the impact of the S/HMO II model through comparisons of S/HMO II enrollees with enrollees who remained in HPNs regular risk sites. The comparisons involve three measures of plan performance: (1) utilization of services, (2) changes in enrollee health and functional status, and (3) quality of care. In addition to these comparisons, an assessment was done of the degree to which enrollees in the S/HMO II plan received the additional services that were unique to the S/HMO. These included care coordination as well as other extra or supplemental services that are not standard Medicare benefits.

The evaluation is based on two primary data sources, encounter data provided by HPN for both the S/HMO II and regular risk plans, and health and functional status assessments (HFAs). HPN collected detailed records of all patient care encounters using standard Health Care Financing Administration (now, CMS) Common Procedure Coding System (HCPCS) procedure codes supplemented by 161 special codes to record the provision of coordination services or expanded or supplementary care benefits. Encounter data were collected for both the S/HMO II and for the risk plans that served as the comparison group.

A CMS contractor performed the HFAs over the telephone at enrollment and every 12 months thereafter for every enrollee at both S/HMO II and comparison sites. In the case of the 20,000 or so beneficiaries who were already enrolled at the time of the November/December 1996

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[7] When the demonstration began, Medicare HMO's were operating under the authority of provisions in the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) and were referred to as TEFRA plans. During the course of the demonstration the Balanced Budget Act of 1997 was passed and Medicare risk plans became an option under Medicare + Choice (M+C) and have subsequently been referred to as M+C plans. To avoid confusion due to the name change, we will refer to the HPN comparison group as the HPN risk plan throughout this report.

[8] When sites converted to the S/HMO II delivery model, beneficiaries were given a choice to transfer to a non-S/HMO site if they desired. Because the S/HMO benefit package was extremely attractive, very few chose to do so.

conversion, initial assessments were done as soon thereafter as was possible. With the rapid entry of so many beneficiaries into the program, however, the process of performing assessments and implementing the full range of S/HMO II services was an enormous challenge (Newcomer, et al., 1999). Because of concerns that the program was not sufficiently implemented until well into 1997, a decision was made to defer the start of the evaluation period until July 1, 1997. The evaluation period ended on May 1, 1999 when, at the request of HPN, the comparison group members were converted to S/HMO II status.

Two additional sources of data are used to perform selected comparisons of S/HMO II enrollees with a number of additional samples of Medicare beneficiaries. In Chapter IV, the impact of the S/HMO II on enrollee health and functional status is assessed using the Medicare Current Beneficiary Survey to compare the performance of the S/HMO II relative to a national sample of Medicare risk plans and to traditional Medicare fee-for service practice. In Chapter 6, quality indicators using CMS claims data, MCBS[9] data and HEDIS[10] data from the Medicare Health Plan Compare web site are used to compare the performance of the S/HMO II with other Nevada health plans and with traditional Medicare fee-for-service practice in Nevada. The major analyses that will be reported in the following chapters are presented in Table I.3.

[9] The Medicare Current Beneficiary Survey (MCBS) is an ongoing CMS survey of a nationally representative sample of Medicare beneficiaries. Approximately 12,000 persons are interviewed at four-month intervals each year. The survey produces detailed information about the health and functional status of Medicare beneficiaries, and includes those enrolled in fee-for-service Medicare as well as those in Medicare risk plans.

[10] Health Plan Employer Information Data Set (HEDIS) is a set of standardized performance measures developed by the National Committee on Quality Assurance, a non-profit organization for the accreditation of managed care plans. HEDIS indicators measure key aspects of health plan quality to allow employers and consumers to make objective comparisons of health plans.

TABLE I.3
ANALYSES PERFORMED IN EVALUATION
OF S/HMO II DEMONTHSTRATION

Variable	Data Source	Sub-Groups Examined	Interval	Chapter
Use of Care Coordination Services Use of Expanded Care Benefits Use of Supplemental Care Benefits	Encounter Data	(1) Candidates for additional services based on health and functional status (2) Enrollees at high risk for repeat hospitalizations.	12 months 1/1/98 - 12/31/98	3
Help received	Year 2 HFA	Help received was analyzed separately for each ADL/IADL[a]. The sample size therefore varied for each ADL/IADL. Only beneficiaries enrolled more than 12 months were included in the analysis.	12 months 1/1/98 - 12/31/98	3
Health and Functional Status	MCBS HFA	Enrollees with two consecutive HFA's, with second occurring between November 1998 and June 1999. (N=12,697)	12 to 24 months	4
Utilization	Encounter Data	(1) **Community sample**[b] - received no care in a skilled nursing, custodial care, or congregate living facility in the 12 months prior to 7/1/97. (Full FU, N = 17,795; shortened FU, N = 4335) (2) **Nursing Home Sample**[b] (received some care in a skilled nursing, custodial care, or congregate living facility in the 12 months prior to 7/1/97. (Full FU, N = 517; shortened FU, N = 208) (3) **High Hospitalization Risk**[c] - Enrollees with two or more hospital admissions in 12 months prior to demonstration (Community, N = 267; NH, N = 141) (4) **Low Hospitalization Risk**[c] - Enrollees with fewer than two hospital admissions in pre-demonstration period. (N=208) (Community, N = 17,528; NH, N = 376)	22 months 7/1/97-4/30/99	5
Quality	Encounter Data HFA MCBS	12 months of Medicare eligibility prior to enrollment	1 to 22 months 7/1/97 - 4/30/99	6
		Flu Shot Sample Enrolled 12+ months after 7/1/97	Prior 12 months	
		Mammography Sample Enrolled 12+ months after 7/1/97	Prior 12 months	

[a] ADLs are Activities of Daily Living. These include bathing, walking, eating, toileting, and dressing. IADL's are Instrumental Activities of Daily Living. These include shopping, preparing meals, using the phone, housework, using transportation, taking medications, and managing finances.
[b] Findings are presented separately for enrollees for whom a full 22 months of follow-up data were available (Full FU), and enrollees for whom fewer than 22 months of data were available (Shortened FU).
[c] For analyses, groups were further sub-divided into beneficiaries with (NH) and without (Community) days in a skilled nursing, custodial care, or congregate living facility in the 12 months prior to 7/1/97.

II. FEATURES OF THE S/HMO II DEMONSTRATION PLAN

As indicated in the previous chapter, the two S/HMO models have much in common. Both offer systematic screening and assessment to identify high risk beneficiaries who will need special services; both offer an expanded array of medical care benefits that is richer than those offered by local Medicare risk plans; and, both offer some of their enrollees additional non-medical services, such as care coordination and personal care, that are not covered by traditional Medicare. Under both S/HMO models, these extra services are provided to beneficiaries who are medically frail, although the two models employ somewhat different approaches to defining medical frailty[11]. Both S/HMO I and S/HMO II plans receive a higher rate of reimbursement for those members who are targeted for extra services. Between 7 and 15 percent of the of S/HMO I plan members and 11 percent of the S/HMO II plan members received expanded services in a given month in 1999 (Wooldridge et al. 2001). In response to the evaluation of the S/HMO I demonstration, however, certain modifications were incorporated into the S/HMO II demonstration that were not included in the earlier demonstration. In the discussion that follows, the salient features of the S/HMO II model will be described in more detail with identification of the ways in which the two models differ.

A. SCREENING AND ASSESSMENT

Both models follow a similar four-step process to identify candidates for care coordination or extra benefits. In both models, enrollees are screened both at intake and on an annual basis thereafter and may be identified as candidates at these times. Current enrollees may also be identified as candidates at any time by their providers and may be referred either from within or from outside the S/HMO. The screening instruments used in S/HMO I and S/HMO II differ somewhat in their details, but both instruments elicit the same basic information: (1) the presence of certain health conditions (such as heart disease, diabetes, or cancer); (2) the member's recent use of hospital, emergency room, or home health services; (3) the member's need for help in activities of daily living (ADLs) or instrumental activities of daily living (IADLs); (4) the number of medications taken; (5) health habits, including smoking, alcohol use, regular exercise, weight gain or loss; and, (6) whether the member has been screened regularly for cancer or has received immunizations.

In S/HMO I plans, the target group for special services consists of enrollees who are nursing home certifiable. The screening instrument is used to make a preliminary determination of whether a member is likely to be nursing home certifiable (NHC) if assessed. When the screen indicates this possibility, a care coordinator visits the member in his or her home and makes a definitive determination of the member's NHC status. Members who prove to be nursing home certifiable are then given a full health assessment.

The S/HMO II plan targets beneficiaries for special services using specific risk factors for high health care use or disability that can be identified in the initial and subsequent annual health status screens. The initial telephone screen automatically generates a problem list for each

[11] S/HMO I plans define members as frail if they meet State Medicaid criteria for nursing home certification, while the S/HMO II plan identifies frailty by specific risk factors identified during initial and subsequent health assessments. The selection criteria are discussed in more detail below.

member and identifies risk factors. The care coordination assistant (a member of the care coordination team which is located in the member's medical clinic) reviews these results and conducts secondary telephone interviews with the member to begin addressing the risk factors. Protocols provide detailed guidelines for addressing each risk factor that is identified.

B. CARE COORDINATION

Care coordination is a professional function that includes: assessment of a person's health, behavior, and his/her home situation; planning and arranging for appropriate care and services; ongoing monitoring of the quality and continued appropriateness of services; ensuring that each provider involved with a beneficiary is aware of and coordinating his or her treatment interventions with other providers; and, periodic reassessment and adjustment of services as necessary. The goal of care coordination is to ensure that beneficiaries receive needed services and that these services are provided in an organized and cost-effective manner.

The S/HMO I and S/HMO II models employ somewhat different approaches to care coordination. In the S/HMO I model, an individual, typically a social worker, located in a specific department, coordinates care. In the S/HMO II model, a team coordinates care. The team includes a registered nurse team leader and care manager; a social worker who plans care related to social, emotional, and environmental issues; and, a care coordination assistant who reviews cases identified during screening processes, informs the team leader of members who are candidates for care coordination, and maintains client records. Most teams are located in primary care medical clinics, thereby improving the opportunities for coordination.

While services available to coordinators in the S/HMO I model are limited primarily to the extra and supplemental services provided by the plan, the S/HMO II care coordination teams manage a broader range of services. The S/HMO II care coordination team prepares a care plan, listing problems and actions to be taken. This plan could include authorizing services covered under the expanded care benefit, or providing other benefits and services the health plan offers such as: disease-specific case management through specialty clinics, home health, primary care providers in medical clinics, geriatric assessments, health education, and other services available in the community. A summary of the care plan that presents problems, recommended actions, and planned services, is sent to the primary care physician. The physician and care coordination team then may authorize expanded care services for a member, if needed.

C. ADDITIONAL SERVICES

Expanded Care Benefits: Both S/HMO models offer additional benefits to selected members that are not available to beneficiaries in regular M+C plans. These benefits include home-and-community-based care to help members remain in their homes (for example, personal care, non-medical transportation, and emergency response systems) and limited institutional care for respite and other purposes. While eligibility for each type of benefit is determined by protocol, HPN does not limit the amount or duration of expanded care benefits for members who continue to meet eligibility requirements. In return for providing these extra benefits, the plans received capitation payments (for these members) that are 5 percent greater than those received by a regular Medicare risk plan. Table II.1 lists the expanded care benefits that the four S/HMO plans provide.

TABLE II.1
EXPANDED CARE BENEFITS OFFERED BY THE S/HMOs

Service	Elderplan	Kaiser	SCAN	HPN
Personal Care	Yes	Yes	Yes	Yes
Homemaker		Yes	Yes	Yes
Transportation	Yes	Yes	Yes	Yes
Transportation with Escort		Yes	Yes	Yes
Emergency Response Systems	Yes	Yes	Yes	Yes
Home-Delivered Meals	Yes		Yes	Yes
Nutrition Supplements			Yes	Yes Plus nutritional counseling
Equipment and supplies		Yes	Incontinence supplies and equip-ment not covered by Medicare	Home safety equipment and other supplies and equipment not covered by Medicare
Counseling for situational disorders		Living skills coaching		Individual or group counseling therapy
Maintenance therapy and home safety		Yes		Yes
In-home respite care	Yes	Yes	Yes	Yes
Adult-day respite care		Yes	Yes	Yes
Adult-day health care	Alzheimer's Disease only	Yes	Respite only	Yes
Medication management		Yes		Both S/HMO and risk plan members
Short-term group home care		Yes		Yes
Short-term nursing home benefit	NF care: 10 days lifetime max Respite benefit of 14 days each year	NF or SNF care: 14 days as respite or post-acute or recu-peration per period.		14-day SNF stay (recertification for days beyond 14), Alzheimer's care home or other licensed facility.

SOURCES: Elderplan: 1997 membership Contract and Expanded Benefits Addendum. Kaiser's Senior Advantage II: Kaiser marketing brochure, □ Comparison of Kaiser Permanente's Senior Advantage Plans and plan information provided in July 1999. SCAN: marketing brochure, . How to Stay Healthy, Independent and Living in Your Home: Independent Living Power™ and □1999 Benefits Table: The Big Picture. Newcomer et al. (1999).

NOTE: SCAN also offers a short-term postacute benefit to all members that includes all services except respite and transportation escort. NF = nursing facility; SNF = skilled nursing facility.

Supplemental Benefits: HPN's special benefits package includes other "supplementary" benefits" – services for which Medicare's coverage is limited to certain situations, but which the plan offers on a less restrictive basis. For example, services may be provided to S/HMO members who have reached their maximum rehabilitative potential under the Medicare home health benefit (and, therefore, would not be covered by Medicare), but are considered by HPN to have continuing needs (for example, to reduce the risk of subsequent injury). Examples of supplementary benefits include intermittent skilled nursing care, visits from social workers, and medical supplies and equipment.

TABLE II.2
SUPPLEMENTAL BENEFITS OFFERED BY THE S/HMOs, 1999

	S/HMO I			S/HMO II
Benefit	Elderplan	Kaiser	SCAN	HPN
Prescription Drugs	Yes	Yes	Yes	Yes
Generic Drug Copay per Rx	$5.00	$5.00	$3.50	$6.00
Prescription Drug Limits	None	None	None	$2,500 per year for brand name drugs None for generics
Hearing Aid Coverage	Every 3 years Up to $6,000	Every 2 years 50 percent discount	*Up to two hearing aids every 2 years* Up to $300 per 2 years	*40 percent discount*
Preventive Dental Care	Two visits per year	None	Unlimited preventive visits per year	None unless purchased under separate rider

SOURCE: CMS Medicare Compare Web Site

As shown in Table II.3, S/HMO I plans place dollar limits on the amount of these services that members can receive. In contrast, HPN, the only S/HMO II plan, has no limit on the benefits members can receive and, during the period covered by the evaluation, did not charge copayments for expanded benefits.

TABLE II.3
EXPENDITURES FOR EXPANDED CARE BENEFITS AT S/HMO I PLANS

	Maximum Permitted Expenditure Per Member		**Average Expenditure Per Member Per Month**
	Per Month	Per Year	
Elderplan	$650	$7,800	$155
Kaiser	$1,000	$12,000	$380
SCAN	$625	$7,500	$100

D. GERIATRIC APPROACHES

Geriatric approaches are a key element of the S/HMO II model. HPN established a geriatrics department to provide specialty clinics for the diagnosis and treatment of cognitive dysfunction, falls and immobility, and incontinence. This department houses a geriatric resource team, which conducts comprehensive interdisciplinary geriatric assessments and provides consultation to other physicians. However, the geriatric approaches are slightly less accessible to the physicians who work in outlying offices since they must travel to the location of the interdisciplinary meetings, and are not reimbursed for time spent in continuing medical education. Details of the geriatric approaches are provided in Table II.4

Table II.4
Geriatric Approaches Used by the S/HMOs

Characteristic	Elderplan	Kaiser	SCAN	HPN
Screen all elderly for risk factors at enrollment and annually	All S/HMO members (since demonstration began)	All S/HMO members (since demonstration began)	All S/HMO members (since demonstration began)	All S/HMO members (since demonstration began)
Provide interventions for identified at-risk members	New risk factors and interventions added during 1998	Extensive list of risk factors and interventions	No[a]	Extensive list of risk factors and interventions
Plan includes geriatric department?	No	Geriatric department with 3.6 geriatricians and 4 nurse practitioners is responsible for nursing home care and consultations to other physicians	No	Yes, plan includes a geriatrics department and geriatric resource teams and specialty clinics with 3 geriatricians, 2 geriatric nurse practitioners, and 1 physician assistant
Primary care teams with physician extenders to facilitate members' access	Few	Each primary care service area has had advice nurses, social workers, and case/care managers for many years	No	Clinical nurse coordinators added in two clinics; see all new seniors (since March 1998) All staff model clinics now have clinical nurse coordinators
Rehabilitation focus to maintain/regain functioning	No	Yes, including physical and occupational therapy evaluations available under expanded benefit	No	Yes, including maintenance therapy

Table II.4 (Continued)
Geriatric Approaches Used by the S/HMOs

Characteristic	Elderplan	Kaiser	SCAN	HPN
Geriatric medication management	Formulary modified for elders. Pharmacy benefits manager checks prescriptions at time of dispensing, using electronic guidelines. Refers to primary care MD, if necessary.	Available to all members Pharmacist located in clinics for many years Screening of all Medicare members for high-risk medication	Pharmacy and Therapeutics Committee reviews all drugs for geriatric use Case managers refer to pharmacist or physician for medication issues	Available to all members Consists of pharmacy component of geriatric specialty clinics, practice guidelines for poly-pharmacy, and review for drug interactions by contracted pharmacies
Primary care team for members in nursing homes	No	By long-term care department teams of geriatricians and nurse practitioners	No	In South of market area: by geriatrics department (preceded demonstration) In North of market area: regular primary care provider
Geriatric care education for physicians	No	Periodic, by Inter-regional Committee on Aging's "Geriatric Institutes"	No[b]	Ongoing program for staff physicians (preceded demonstration) Interdisciplinary team meetings with primary care provider, in staff model clinics
Geriatric specialty clinics	No	No	No	Yes

SOURCE: Visits to three S/HMO I sites and S/HMO site provider directories; Newcomer (1999) for the S/HMO II site.

NOTES: [a]SCAN introduced expanded risk identification in June 1999, with interventions scheduled for late summer 1999.
[b]SCAN is implementing a program for diabetes, dementia, and depression.

III. USE OF SPECIAL S/HMO BENEFITS

The S/HMO II plan relies on care coordination and other special services (described in the previous Chapter) to reduce the rate of hospitalization and nursing home placement among the frailest members. It is therefore of central importance to this evaluation to know what proportion of S/HMO II members actually use the program's special services and how these services are targeted to clients.

A. METHODS

The analysis of service use relied on HPN encounter records for 19,348 beneficiaries who were enrolled in the S/HMO II for at least one month in 1998. Analysis of care coordination benefits was carried out using a subsample of 17,186 beneficiaries for whom a baseline health assessment was available. These surveys were used to construct rough estimates of the number of members who may have been eligible for care coordination benefits as described below.

Investigation of assistance received by S/HMO II and risk plan members was based on responses to the health assessment survey during the second year. All respondents to the survey had been enrolled in the S/HMO II or risk plan for at least one year. Although the combined sample size was 22,631, analysis was limited to enrollees who indicated difficulty in certain Activities of Daily Living (ADLs) or Instrumental Activities of Daily Living (IADLs) as outlined in Table III.1.

TABLE III.1
CRITERIA FOR APPROXIMATING ELIGIBILITY FOR SPECIAL BENEFITS

Type of assessment or benefit	Criteria
Primary assessment	Lives in nursing home, or $P_{ra} > 0.5$[a] or one or more ADL limitations, or three or more IADL limitations
Social assessment	Difficulty dressing, transferring, toileting, or eating, or difficulty with 3 or more IADLs
Functional assessment	Recent fall, or uses DME, or receives home health aide care
Medical assessment	2+ hospital admissions in past year, or 5+ prescription drugs, or 5+ OTC medications, or COPD, diabetes, or heart disease, or 7+ physician visits in past year, or self-reported health is fair or poor
Cognitive assessment	Bothered by emotional problems, or mental/psychiatric disorder
Lifestyle assessment	Smokes, or uses alcohol, or had unintended weight gain/loss
Initial care plan development	Received an assessment
Expanded or supplementary benefits	Received care coordination services

[a] P_{ra} is the probability of repeated admission (Pacala, et al 1997, Boult et al. 1998). It is a measure of the risk of repeated hospitalization calculated using 17 items related to general health status, depression, medical conditions, functional limitations, use of prescription drugs, age and availability of caregivers at home.

The S/HMO II and risk plan members who received assistance as a proportion of survey respondents who reported difficulty in performing daily tasks was estimated. Beneficiaries who responded 'yes' to the question "Do you have difficulty performing this activity?" and also 'yes' to the question "Is your difficulty because of a health or physical problem?" for each of six ADLs and 7 IADL defined the group with difficulty in daily functions. The combined number of S/HMO II and risk plan members with functional limitations varied from 2,984 (difficulty with walking) to just 198 (difficulty with eating). The proportion of the respondents with difficulty in daily tasks who responded 'yes' to the question "Do you get help performing this activity from another person?" was calculated for both S/HMO II and risk plan enrollees.

B. FINDINGS

1. Care Coordination

Table III.2 shows the proportion of S/HMO II members who received care coordination services in 1998. About 15 percent of all members received a comprehensive assessment. Among the 4,472 members whose responses to the baseline health status survey may have triggered a referral to care coordination, about half (2,232 members) received an assessment. The social and situational assessments were relied on most to trigger care coordination. Initial or follow-up care plans were prepared for about 17 percent of the sample in 1998.

The number of assessments and care plans carried out by the S/HMO II seems low compared to the number of patients who appeared to be eligible. Care coordinators may have been overwhelmed by the rollover of more than 20,000 members from HPNs Medicare risk plan to its S/HMO II plan and could not meet this concentrated demand for assessments and care plans (Newcomer et al. 1999). Moreover, Newcomer et al. found that nearly half the members who reported a chronic illness at the time of the baseline health status survey denied having the illness when approached by HPN for a follow-up assessment and refused the evaluation. Other members may have died, disenrolled, or may have been unable to complete an assessment due to impaired cognition.

TABLE III.2
USE OF S/HMO II CARE COORDINATION BENEFITS, 1998: PERCENT OF MEMBERS

Benefit	Among All Members	Among Members Estimated to be Eligible Based on Health Status Survey Responses
Comprehensive Assessments[a]	14.7	46.9 [4,472]
Supplementary Screens/Assessments		
Social and situational[b]	14.3	52.4 [2,734]
Functional[c]	6.0	19.7 [3,582]
Medical[d]	5.4	8.9 [9,260]
Cognitive/emotional[e]	1.5	5.2 [2,583]
Lifestyle[f]	1.0	2.2 [6,479]
Care Plans		
Initial development	6.6	32.4 [3,368]
Follow-up	10.2	48.9 [3,368]
Number of Members	**17,186**	

SOURCE: HPN encounter data and MPR baseline survey. Sample includes HPN S/HMO members who enrolled between July 1, 1997 and December 1, 1998, were members for at least one month in 1998, and completed a baseline health status survey.

NOTE: Figures are annualized to reflect varying lengths of observation across members of the sample. Number estimated eligible for benefit is shown in brackets.

[a]Includes HPN's "full" and "primary" assessments and reassessments, which may be conducted in the home, clinic, or other institution.
[b]Includes social work assessments and evaluations of caregiver behavior and depression, social relationships, abuse, violence, neglect, or vulnerability, and financial status.
[c]Includes balance and falling, incontinence, foot problems, hearing and vision, trouble sleeping, physical therapy, and pain.
[d]Includes high blood pressure, congestive heart failure, diabetes, and emphysema.
[e]Includes the mini-mental state exam and evaluation of depression.
[f]Includes nutrition, smoking, and alcohol use.

2. Use of Expanded and Supplementary Care Benefits

Use of expanded-care benefits by S/HMO II enrollees is shown in Table III.3. Transportation and home safety evaluations and instruction were used more frequently than any other benefit, each by about 20 percent of those members who received an assessment or care plan during the year. Substantial proportions of these members also used S/HMO-covered home safety equipment (16 percent) and personal assistance services (11 percent). By contrast, relatively few members used respite-related services; 4 percent of members with an assessment or care plan used short-term group home care, and fewer than 1 percent used adult day care, short-term skilled nursing care, or in-home respite care.

TABLE III.3
USE OF EXPANDED CARE BENEFITS, 1998:
PERCENT OF MEMBERS

	Among All Members		Among Members with an Assessment or Care Plan	
Benefit	**Percent**	**Number**	**Percent**	**Number**
Number of Members		19,349		3,673
Maintenance Therapy and Home Safety				
Evaluations and Instruction	4.4	851	20.7	760
Equipment	3.2	619	16.3	599
Therapy and Exercise	1.9	368	8.3	305
Structural Modification	0.0	11	0.3	11
Transportation[a]	5.3	1,025	19.2	705
Personal Emergency Response Systems	1.6	310	8.1	298
Personal Assistance	2.3	445	10.8	397
Homemaker Services	1.9	368	9.3	342
Heavy Housecleaning	0.3	67	1.8	66
Short-Term Group Home Care	0.9	174	4.4	162
Adult Day Care	0.1	29	0.8	29
Short-Term Skilled Nursing Care	0.0	9	0.2	7
In-Home Respite Care	0.0	2	0.1	2
Counseling for Situational Disorders[b]	0.1	25	0.7	25
Nutritional Supplements or Food Purchases	0.0	19	0.5	18

SOURCE: HPN encounter data. Sample includes HPN S/HMO members who enrolled at any time between July 1, 1997, and December 1, 1998, with at least one month of membership in 1998. It includes 2,163 enrollees not included in Table III.2 because they lacked baseline health surveys.

NOTE: Percentages are annualized to reflect varying lengths of observation across members of the sample. Results in the right-hand column are calculated over the 3,673 members who had any type of assessment or care plan in 1998; the actual number of members who were eligible to receive a particular expanded care benefit based on the *results* of those assessments would be likely to be much smaller.

[a]Includes trips by wheelchair, bus or van, stretcher, and taxi.
[b]Includes in-person and telephone sessions.

Among the supplementary benefits provided by the S/HMO II, intermittent skilled nursing care, supplies, and durable medical equipment were most commonly used (Table III.4). Six percent of all members and 21 percent of those with an assessment or care plan used intermittent skilled nursing care in 1998. Fully 10 percent of members with an assessment or care plan used a portable oxygen system during the year, and a correspondingly substantial percentage (16 percent) used oxygen-related supplies. Finally, 4 percent of all enrollees and 13 percent of those with an assessment or care plan used wheelchairs.

It is difficult to determine if the provision of expanded and supplementary benefits is appropriate because the number of members who were or should have been considered eligible to receive these services was not independently established. However, 1998 levels of use for most benefits may have been somewhat less than optimal. Most of the S/HMO II care coordination staff were newly hired as of January 1998. As a result, these coordinators had not yet established strong working relationships with the HPN physicians who must authorize the provision of expanded or supplementary care benefits. Newcomer et al. (1999) report that in 1998, staff routinely requested authorization two or three times before getting a physician's response. Limited availability of vendors, especially in Nevada's rural areas, also may have hindered service use (Newcomer et al. 1999).[12] Recent data provided by HPN indicate that S/HMO II spending per-member per-month on expanded care benefits increased by 87 percent between 1998 and 1999.

3. Use of Expanded and Supplemental Benefits by Members at High Risk of Hospitalization

As a measure of the degree to which the S/HMO II provided expanded services to members at greatest risk, the proportion of enrollees receiving these services was computed separately for those with a high predicted probability of hospitalization. This probability was computed using a scale known as the Probability of Repeated Admission, or P_{ra} (Pacala et al. 1997; Boult et al. 1998). The P_{ra} is calculated using 17 items capturing general health status, depression, medical conditions, ADL and IADL limitations, prescription medications, age, and availability of caregivers in the home.

[12]By contrast, members' use of portable oxygen systems and wheelchairs seemed relatively high. Without more information about health status (such as the severity of chronic conditions like congestive heart failure and pulmonary diseases) and HPN's eligibility criteria, the appropriateness of the services is difficult to assess.

TABLE III.4
USE OF SUPPLEMENTARY CARE BENEFITS, 1998:
BY PERCENTAGES AND NUMBERS

Benefit	Among All Members		Among Members with an Assessment or Care Plan	
	Percent	Number	Percent	Number
Intermittent Skilled Nursing Care	6.2	1,200	20.5	753
Supplies				
Refills and supplies for portable oxygen systems	7.0	1,354	15.9	584
Other[a]	0.9	174	3.0	110
Durable Medical Equipment				
Portable oxygen systems	4.0	774	10.4	382
Wheelchairs	3.6	697	12.5	459
Hospital beds and mattresses	1.6	310	5.9	217
Patient Evaluations in Skilled Nursing Facilities				
Comprehensive evaluations	2.8	542	9.4	345
Subsequent evaluations	3.8	735	11.9	437
Physical Therapy[b]	2.3	445	8.6	316
Occupational Therapy[b]	0.8	155	3.1	114
Social Worker Visit	0.7	135	3.4	125
Speech Therapy[b]	0.3	58	1.1	40
Unspecified Supplies and Equipment	1.4	271	4.2	154
Total Persons		19,349		3,673

SOURCE: HPN encounter data. Sample includes HPN S/HMO members who enrolled at any time between July 1, 1997, and December 1, 1998, with at least one month of membership in 1998.

NOTE: Percentages are annualized to reflect varying lengths of observation across members of the sample. Results in the right-hand column are calculated over the 3,673 members who had any type of assessment or care plan in 1998; the actual number of members who were eligible to receive a particular supplementary care benefit based on the *results* of those assessments would likely be much smaller.

[a]Includes canes, walkers, commode chairs, raised toilet seats, toilet rails, tub stools, lift chairs, rollabout chairs, pressure pads for mattresses, and continuous passive motion machines.
[b]Includes services delivered at home or in a skilled nursing facility.

Table III.5 shows the proportion of S/HMO II members at high-risk of hospitalization who received care coordination or additional benefits. In most cases, high-risk members were substantially more likely to receive such benefits. High-risk enrollees were more than three times as likely to receive comprehensive or other assessments or to receive a care plan. Expanded and supplementary care was also far more likely to be provided to members of the high-risk group, especially for services such as transportation, maintenance therapy and home safety, personal assistance, intermittent skilled nursing care, and durable medical equipment.

TABLE III.5
USE OF SPECIAL BENEFITS BY MEMBERS AT RISK AND NOT AT RISK FOR MULTIPLE HOSPITALIZATIONS, 1998: BY PERCENTAGES

Benefit	Members At Risk	Members Not At Risk	Difference	
Care Coordination[a]				
Comprehensive Assessments	49.8	13.3	36.5	**
Supplementary Screens/Assessments				
Social and situational	48.9	13.0	35.9	**
Functional	25.6	5.3	20.3	**
Medical	22.2	4.7	17.5	**
Cognitive/emotional	6.7	1.3	5.4	**
Lifestyle	5.7	0.9	4.8	*
Care Plans				
Initial development	24.7	5.9	18.8	**
Follow-up	41.5	8.9	32.6	**
Expanded Care[b]				
Transportation	17.8	4.5	13.3	**
Maintenance Therapy and Home Safety				
Evaluations and instruction	19.6	4.0	15.6	**
Equipment	17.2	2.8	14.4	**
Therapy and exercise	7.0	1.8	5.2	**
Structural modification	0.5	0.0	0.5	
Personal Emergency Response Systems	8.6	1.4	7.2	**
Personal Assistance	12.4	2.0	10.4	**
Homemaker Services	7.2	1.7	5.5	**
Heavy Housecleaning	1.5	0.3	1.2	*
Short-Term Group Home Care	3.7	0.7	3.0	
Adult Day Care	0.3	0.1	0.2	
Short-Term Skilled Nursing Care	0.2	0.0	0.2	
In-Home Respite Care	0.0	0.0	0.0	

TABLE III.5 (CONTINUED)
USE OF SPECIAL BENEFITS BY MEMBERS AT RISK AND NOT AT RISK FOR MULTIPLE HOSPITALIZATIONS, 1998: BY PERCENTAGES

Benefit	Members At Risk	Members Not At Risk	Difference	
Counseling for Situational Disorders	0.3	0.1	0.2	
Nutritional Supplements or Food Purchases	0.8	0.1	0.7	
Supplementary Care[c]				
Intermittent Skilled Nursing Care	28.1	5.1	23.0	**
Supplies				
Refills and supplies for portable oxygen systems	25.7	6.1	19.6	**
Other	2.5	0.8	1.7	
Durable Medical Equipment				
Portable oxygen systems	16.9	3.3	13.6	**
Wheelchairs	16.4	2.9	13.5	**
Hospital beds and mattresses	8.4	1.2	7.2	**
Patient Evaluations in Skilled Nursing Facilities				
Comprehensive evaluations	13.0	1.9	11.1	**
Follow-up evaluations	13.5	2.3	11.2	**
Physical Therapy	10.2	1.9	8.3	**
Occupational Therapy	4.2	0.5	3.7	**
Speech Therapy	1.0	0.2	0.8	
Social Worker Visit	3.3	0.6	2.7	**
Unspecified Supplies and Equipment	6.2	1.2	5.0	
Number of Members	**675**	**16,511**		

SOURCE: HPN encounter data and MPR baseline survey. Sample includes HPN S/HMO members who: (1) enrolled at any time between July 1, 1997, and December 1, 1998; (2) had at least one month of membership in 1998; and (3) completed a baseline health status survey.

NOTE: Figures are annualized to reflect varying lengths of observation across members of the sample.

[a]For descriptions of specific care coordination benefits, see Table III.2.
[b]For descriptions of specific expanded care benefits, see Table III.3.
[c]For descriptions of specific supplementary care benefits, see Table III.4.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.

4. Help Received by S/HMO II and Risk Plan Members

Table III.6 shows the number of S/HMO II and risk plan members who reported receiving help with ADL and IADL tasks, expressed as a proportion of those who reported difficulty in performing the task due to a health or physical problem. For 9 of the 13 tasks, differences in the proportion receiving help were not significant at the 0.10 level. Risk plan members were more likely than S/HMO II members to receive assistance in bathing and eating, while S/HMO II members were more likely to receive assistance with managing medications and finances.

TABLE III.6
PROPORTION OF S/HMO II AND RISK PLAN MEMBERS WHO REPORT RECEIVING HELP (AMONG THOSE REPORTING DIFFICULTY DUE TO HEALTH OR PHYSICAL PROBLEM)

Activity	Percent of S/HMO II members	Percent of risk plan members	Difference (Percentage Points)		Sample size
Bathing	54.1	58.1	-4.8	*	1,706
Dressing	71.9	71.0	0.9		1,013
Transfer	48.4	50.9	-2.5		1,387
Eating	75.0	87.1	-12.1	**	198
Walking	39.7	41.1	-1.4		2,984
Toileting	41.3	47.4	-6.1		697
Shopping	84.7	85.6	-0.9		1,720
Telephone	65.1	64.0	1.1		1,143
Housework	84.4	84.6	-0.2		1,218
Meals	80.4	78.2	2.2		1,157
Transportation	70.9	72.3	-1.4		1,282
Managing medication	87.1	78.6	8.5	**	389
Managing finances	93.2	87.5	5.7	**	573

SOURCE: Year 2 Health Status Survey

*Statistically significant at $p < 0.10$.
**Statistically significant at $p < 0.05$.

C. DISCUSSION

SLIGHTLY MORE THAN ONE-QUARTER OF S/HMO II MEMBERS RECEIVED SPECIAL BENEFITS OF SOME FORM DURING 1998. MOST OF THESE RECEIVED CARE COORDINATION BENEFITS IN THE FORM OF SPECIALIZED ASSESSMENTS AND CARE PLANS. A SMALLER NUMBER RECEIVED EXPANDED OR SUPPLEMENTAL BENEFITS, PARTICULARLY TRANSPORTATION, OXYGEN SUPPLIES, INTERMITTENT SKILLED CARE, AND MAINTENANCE THERAPY. ANALYSIS OF SERVICES USED BY MEMBERS WITH A HIGH PROBABILITY OF HOSPITALIZATION SUGGESTS THAT THE S/HMO II DID TARGET SERVICES DISPROPORTIONATELY TO THOSE AT HIGHEST RISK. IT IS IMPOSSIBLE TO DETERMINE USING AVAILABLE DATA IF THE LEVEL OF SERVICES OR THE EXTENT OF TARGETING WAS OPTIMAL, GIVEN THE PAYMENT FORMULA AND THE HEALTH NEEDS OF MEMBERS.

The effectiveness of the S/HMO II intervention in improving beneficiary outcomes and in reducing admissions to hospitals or nursing homes hinges critically on the targeting of services and on the extent to which these services can improve outcomes or delay the onset and progression of functional decline. Because most members did not receive (and probably did not need) any special S/HMO II services, it is doubtful that the S/HMO will be found to improve outcomes markedly for the overall enrollee population unless the services themselves are extraordinarily effective.

There was little evidence to suggest that S/HMO II members received more help with the activities of everyday life (ADLs and IADLs) than did members of the HPN risk plan. S/HMO II members were found to be *less likely* than risk-plan members to receive assistance with bathing and eating—a result that is difficult to interpret. It is seems unlikely that the provision of additional services beyond those covered by Medicare could *reduce* the proportion of individuals with these ADL limitations who receive help. This result could, of course, arise from sampling error. Another possibility is that the HPN risk plan may also have delivered services of some form that led to increased levels of assistance for frail members. Finally, the process of assigning members to S/HMO II and risk-plan status did not necessarily ensure an equal distribution of informal caregivers in the two groups.

However, the analyses of S/HMO II and risk plan members with ADL or IADL limitations does not offer convincing evidence that S/HMO II members are more likely than others to receive assistance with these activities. Outcomes associated with unmet needs arising from functional limitations may therefore be only slightly affected by the S/HMO II intervention.

IV. EFFECTS OF THE S/HMO II MODEL ON HEALTH STATUS AND FUNCTIONING

The S/HMO II demonstration was designed to provide supportive care to the frail elderly and disabled with the goal of slowing the progress of disability and enhancing the functional capacity of S/HMO II members for as long as possible. This chapter describes a more extensive examination of the effect of S/HMO II on health and functioning than was contained in the previous report. It draws on interviews with nearly twice as many beneficiaries, employs more indicators of outcomes, and performs separate analyses on subgroups of the enrolled population most likely to be targeted for special S/HMO II services.

In Section A, the effects of S/HMO II program on all enrollees is assessed. Section B repeats the analyses described in section A on a small sub-group of medically high risk enrollees. Finally, in Section C, an examination for possible "spill-over" effects – the unintended transfer of S/HMO II type approaches to the HPN risk plans is presented.

A. HEALTH AND FUNCTIONAL STATUS: S/HMO II VS RISK GROUP ENROLLEES

Changes in the health status and functional status of beneficiaries were measured by means of the Health and Functioning Assessment (HFA), a structured interview that included questions designed to evaluate the health status of enrollees as well as their ability to perform ADLs and IADLs. The analysis sample consists of 12,697 S/HMO II and 4,394 risk plan enrollees who

were administered two consecutive HFAs, with the second administration occurring between November 1998 and June 1999.

1. Outcome Measures

A total of 39 comparisons were made between S/HMO II and risk plan enrollees (Table IV.1). The first ten measures relate to changes in physical, cognitive, and emotional health between the first and second interviews. These measures were designed to determine whether health and functioning (1) improved over time, or (2) did not worsen over time. The next thirteen measures concern changes in the ability of respondents to perform ADLs and IADLs. Changes in each of the 13 ADLs and IDLs were computed separately for those who reported difficulty performing the same ADL or IADL at the first interview and for those who reported no difficulty at the first interview, resulting in a total of 26 comparisons for this set of measures. The final three measures address the frequency of urine accidents, bowel accidents, and falls.

TABLE IV.1
HEALTH AND FUNCTIONING OUTCOMES AND SUBGROUPS

Outcome	Source of Information	Subsample Criteria/Explanation
Physical Health and Functioning, Cognitive Health and Emotional Health		
General health improved	First and second interviews	Excludes enrollees reporting excellent health relative to others of the same age, at the first interview
General health improved or was unchanged	First and second interviews	Excludes enrollees reporting poor health relative to others of the same age, at the first interview
Ability to lift 10 pound objects improved	First and second interviews	Excludes enrollees reporting no difficulty lifting at the first interview
Ability to lift 10 pound objects improved or was unchanged	First and second interviews	Excludes enrollees reporting a lot of difficulty lifting at the first interview
Ability to walk a quarter of a mile improved	First and second interviews	Excludes enrollees reporting no difficulty walking at the first interview
Ability to walk a quarter of a mile improved or was unchanged	First and second interviews	Excludes enrollees reporting a lot of difficulty lifting at the first interview
Memory improved	First and second interviews	Excludes enrollees reporting no difficulty remembering in the past month
Memory improved or was unchanged	First and second interviews	Excludes enrollees reporting a lot of difficulty remembering in the past month
Frequency of emotional problems improved	First and second interviews	Excludes enrollees reporting not at all bothered by emotional problems in the past month
Frequency of emotional problems improved or was unchanged	First and second interviews	Excludes enrollees reporting extremely or always bothered by emotional problems in the past month
Activities of Daily Living		
Difficulty bathing, at the second interview	Second interview	(1) Enrollees reporting no difficulty bathing, at the first interview only (2) Enrollees reporting difficulty bathing, at the first interview only
Difficulty walking, at the second interview	Second interview	(1) Enrollees reporting no difficulty walking, at the first interview only (2) Enrollees reporting difficulty walking, at the first interview only

TABLE IV.1 (Continued)
HEALTH AND FUNCTIONING OUTCOMES AND SUBGROUPS

Outcome	Source of Information	Subsample Criteria/Explanation
Difficulty walking, at the second interview	Second interview	(1) Enrollees reporting no difficulty walking, at the first interview only (2) Enrollees reporting difficulty walking, at the first interview only
Difficulty eating, reported at the second interview	Second interview	(1) Enrollees reporting no difficulty eating, at the first interview only (2) Enrollees reporting difficulty eating, at the first interview only
Difficulty toileting, reported at the second interview	Second interview	(1) Enrollees reporting no difficulty toileting, at the first interview only (2) Enrollees reporting difficulty toileting, at the first interview only
Difficulty dressing, reported at the second interview	Second interview	(1) Enrollees reporting no difficulty dressing, at the first interview only (2) Enrollees reporting difficulty dressing, at the first interview only
Instrumental Activities of Daily Living		
Difficulty shopping, at the second interview	Second interview	(1) Enrollees reporting no difficulty shopping, at the first interview only (2) Enrollees reporting difficulty shopping, at the first interview only
Difficulty preparing meals, at the second interview	Second interview	(1) Enrollees reporting no difficulty preparing meals, at the first interview only (2) Enrollees reporting difficulty preparing meals, at the first interview only
Difficulty using the phone, at the second interview	Second interview	(1) Enrollees reporting no difficulty using the phone, at the first interview only (2) Enrollees reporting difficulty using the phone, at the first interview only
Difficulty doing housework, at the second interview	Second interview	(1) Enrollees reporting no difficulty doing housework, at the first interview only (2) Enrollees reporting difficulty doing housework, at the first interview only
Difficulty using transportation, at the second interview	Second interview	(1) Enrollees reporting no difficulty using transportation, at the first interview only (2) Enrollees reporting difficulty using transportation, at the first interview only

TABLE IV.1 (Continued)
HEALTH AND FUNCTIONING OUTCOMES AND SUBGROUPS

Outcome	Source of Information	Subsample Criteria/Explanation
Difficulty taking medications, at the second interview	Second interview	(1) Enrollees reporting no difficulty taking medications, at the first interview only (2) Enrollees reporting difficulty taking medications, at the first interview only
Difficulty managing finances, at the second interview	Second interview	(1) Enrollees reporting no difficulty managing finances, at the first interview only (2) Enrollees reporting difficulty managing finances, at the first interview only
Other Outcomes		
Falls in the past month	Second interview only	All enrollees
Urine accidents in the past year	Second interview only	All enrollees
Bowel accident in the past year	Second interview only	All enrollees
Subgroup Definitions		
Age 80 and above/under age 80	First interview	Self-explanatory
Difficulty remembering/No difficulty remembering	First interview	Reported Alzheimer's disease or had difficulty remembering some or a lot the time
Reports emotional problems/does not report emotional problem	First interview	Reports (1) bothered by emotional problems quite a bit or extremely or all of the time, or (2) felt downhearted or blue all of the time, most of the time, or a good bit of the time
Incontinence/no incontinence	First interview	Reported urine or bowel accidents in the past 12 months of the first interview
High probability of repeated hospitalization (PRH)	First interview and PRH scoring formula	High if PRH > = 40%
Two or more hospital visits/one or no hospital visits	First interview	Self-explanatory
Independent/not independent	First interview ADL responses	Independent of scores 5 or more on the Katz index of independence
Health fair or poor/health good, very good or excellent	First interview	Self-explanatory

NOTE: For individuals in the MCBS, the first interview refers to respondents to the 1996 MCBS, and the second interview refers to the same respondents, with measures obtained from their follow-up interview in the 1997 MCBS.

2. Analytical Approach

As indicated earlier, HPN members were assigned to the S/HMO II or to the comparison group as a function of the health center to which they belonged. Some centers were chosen to implement the S/HMO II model and the remaining centers were used as a comparison group. The S/HMO II and comparison groups that result from this assignment were not perfectly matched on certain participant characteristics that could affect the outcome variables being used to assess the impact of the S/HMO II program. A statistical adjustment was needed to offset the possible effects of random differences between the two samples of variables that could affect the outcomes being measured. Examples of such variables are age, gender, health status, and other health-relevant participant characteristics. Logistic regression analysis was used to adjust for the effects of such group differences in the findings that are reported below.

3. Findings for the Full S/HMO II Sample

Physical, cognitive, and emotional health (Table IV.2). - Despite large sample sizes, only two differences between S/HMO II and risk plan members reached statistical significance[13]. Fewer S/HMO II members rated their general health as improved while more rated their memory as improved or unchanged.

[13] Unless otherwise stated, "statistical significant" will indicate p. < .05 (two-tailed).

TABLE IV.2
S/HMO II EFFECTS ON PHYSICAL, COGNITIVE, AND EMOTIONAL HEALTH

Outcome[a]	Adjusted SHMO II (Percent)	Adjusted HPN Risk Plan (Percent)	Estimated S/HMO II Effect[b]	p-Value	N
PHYSICAL HEALTH AND FUNCTIONING					
d	26.98	28.84	-1.86 **	.027	13,777
d or Was Unchanged	70.11	69.88	0.23	.766	16,071
	44.77	45.47	-0.70	.694	4,028
or Was Unchanged	84.38	84.43	-0.05	.938	15,709
	34.68	34.89	-0.21	.883	5,634
as Unchanged	78.95	79.14	-0.19	.796	15,139
Cognitive Health					
	34.60	32.86	1.74	.117	8,782
as Unchanged	76.22	74.55	1.67 **	.028	16,366
Emotional Health					
Problems Improved	43.82	42.92	0.90	.478	7,756
Problems Improved or Was Unchanged	75.65	74.79	0.86	.258	16,644

SOURCE: Survey of Health Plans of Nevada's risk plan and S/HMO beneficiaries.

NOTE: All mean outcomes are adjusted for differences between S/HMO and risk plan enrollees' demographic and health characteristics at the "first" interview. Adjusted means are estimated using logit models.

[a]The analysis sample for health outcomes that improved excludes enrollees who initially reported that highest level of health for the outcomes because it could not improve for these individuals. Similarly, the analysis sample for health outcomes that improved or did not worsen excludes enrollees who reported the lowest level of health for the outcomes.

[b]The estimated effects are the difference between the adjusted percentage of S/HMO II enrollees with the outcome and the adjusted percent of risk plan enrollees with the outcome. A positive sign indicates greater improvement or less decline in S/HMO II enrollees; a negative sign indicates greater improvement or less decline in comparison group.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

ADL/IADL changes (Table IV.3) – As noted below, for each ADL/IADL two comparisons were made, one for individuals who reported no difficulty with the ADL/IADL at the first interview, and a second for individuals who did report difficulty. No significant differences were found between S/HMO II and risk plan members for 10 of the 12 ADL comparisons. However, a lower percentage of S/HMO II members in both sub-groups (difficulty at first interview/no difficulty at first interview) reported difficulty eating at the time of the second interview.

TABLE IV.3
S/HMO II EFFECTS ON ADL AND IADL PERFORMANCE

Outcome[a]	Adjusted SHMO II (Percent)	Adjusted HPN Risk Plan (Percent)	Estimated S/HMO II Effects[b]		*p*-Value	N
Difficulty Bathing, Reported at the Second Interview By Respondents with:						
No Difficulty at First Interview	5.31	5.11	-0.20		.611	15,692
Difficulty at First Interview	65.00	64.46	-0.54		.845	1,373
Difficulty Walking at the Second Interview By Respondents with:						
No Difficulty at First Interview	8.01	7.39	-0.62		.159	14,575
Difficulty at First Interview	72.67	72.91	+0.24		.901	2,490
Difficulty Ambulating, Reported at the Second Interview By Respondents with:						
No Difficulty at First Interview	4.79	5.06	+0.27		.464	15,914
Difficulty at First Interview	52.53	52.93	+0.40		.900	1,151
Difficulty Eating, Reported at the Second Interview By Respondents with:						
No Difficulty at First Interview	0.66	1.15	+0.49	***	.001	16,933
Difficulty at First Interview	37.58	70.00	+32.42	***	.002	132
Difficulty Toileting, Reported at the Second Interview By Respondents with:						
No Difficulty at First Interview	2.55	2.64	+0.09		.759	16,612
Difficulty at First Interview	55.40	48.02	-7.38		.145	453
Difficulty Dressing, Reported at the Second Interview By Respondents with:						
No Difficulty at First Interview	3.14	3.61	+0.47		.116	16,330
Difficulty at First Interview	62.22	56.38	-5.84		.124	735

TABLE IV.3 (Continued)
S/HMO II EFFECTS ON ADL AND IADL PERFORMANCE

Outcome[a]	Adjusted SHMO II (Percent)	Adjusted HPN Risk Plan (Percent)	Estimated S/HMO II Effects[b]		*p*-Value	N
Difficulty Shopping at Second Interview By Respondents with:						
No Difficulty at First Interview	5.89	5.76	-0.13		.746	15,137
Difficulty at First Interview	67.87	65.59	-2.28		.331	1,928
Difficulty Preparing Meals at Second Interview By Respondents with:						
No Difficulty at First Interview	4.30	5.20	+0.90	**	.012	15,449
Difficulty at First Interview	56.88	57.27	+0.39		.872	1,616
Difficulty Using the Phone, Reported at the Second Interview By Respondents with:						
No Difficulty at First Interview	3.68	3.57	-0.11		.718	16,057
Difficulty at First Interview	59.80	63.77	+3.97		.237	1,008
Difficulty Doing Housework, Reported at the Second Interview By Respondents with:						
No Difficulty at First Interview	4.44	5.40	+0.96	***	.009	15,611
Difficulty at First Interview	54.30	57.63	+3.33		.214	1,454
Using Transportation, Reported at the Second Interview By Respondents with:						
No Difficulty at First Interview	4.69	4.93	+0.24		.495	15,997
Difficulty at First Interview	51.72	45.38	-6.34	*	.061	1,068
Difficulty Taking Medications, Reported at the Second Interview By Respondents with:						
No Difficulty at First Interview	1.52	1.74	+0.22		.306	16,770
Difficulty at First Interview	43.00	47.09	+4.09		.523	295
Difficulty Managing Finances, Reported at the Second Interview By Respondents with:						
No Difficulty at First Interview	2.49	3.14	+0.65	**	.025	15,685
Difficulty at First Interview	47.60	48.40	+0.80		.767	1,380

SOURCE: Survey of Health Plans of Nevada's risk plan and S/HMO beneficiaries.

NOTE: All mean outcomes are adjusted for differences between S/HMO and risk plan enrollees' demographic and health characteristics at the first interview. Adjusted means are estimated using logit models.

[a]Enrollees were assumed to have difficulty with an activity of daily living or an instrumental activity of daily living if they reported difficulty performing the activity by themselves and either (1) reported difficulty because of health or physical problems or (2) received help from another person to perform the activity.

[b]The estimated effects represent the difference between the adjusted percentage of S/HMO II enrollees with the outcome and the adjusted percentage of risk plan enrollees with the outcome. All figures are rounded to the nearest tenth of a percent. A positive sign indicates greater improvement or less decline in S/HMO II enrollees; a negative sign indicates greater improvement or less decline in comparison group.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

Only three of the 14 comparisons involving IADL's reached statistical significance. S/HMO II enrollees were less likely than risk plan enrollees to report difficulties with preparing meals, doing housework, and managing finances at the second interview. While statistically significant, the differences were small (less than one percent) in all three cases. S/HMO II enrollees were somewhat more likely to report difficulty using transportation. This difference, while larger in absolute terms, did not achieve significance at the .05 level, possibly due to the smaller sample size.

There were no statistically significant differences between S/HMO II and HPN risk plan enrollees in the occurrence of falls, urine accidents, or bowel accidents (Table IV.4).

TABLE IV.4
OTHER S/HMO II EFFECTS

Outcome	Adjusted S/HMO II (Percent)	Adjusted HPN Risk Plan (Percent)	Estimated S/HMO II Effect[a]	*p*-Value	N
Falls	7.65	7.79	+0.14	0.747	17,065
Urine Accidents	16.65	16.34	-0.31	0.615	17,065
Bowel Accidents	7.84	8.20	+0.36	0.435	17,065

SOURCE: Survey of Health Plans of Nevada's risk plan and S/HMO beneficiaries.
NOTE: All mean outcomes are adjusted for differences between S/HMO and risk plan enrollees' demographic and health characteristics at the first interview. Adjusted means are estimated using logit models.

[a]A positive sign indicates greater improvement or less decline in S/HMO II enrollees; a negative sign indicates greater improvement or less decline in comparison group.

B. HEALTH AND FUNCTIONAL STATUS: HIGH RISK SUB-GROUPS AND THEIR COMPLEMENTS

It is possible that the benefits of the S/HMO II model may be evident only for enrollees with serious health problems or other characteristics that put them at high risk for such problems. To evaluate this possibility, the impact of the S/HMO II was measured on the following eight sub-groups of beneficiaries considered to be at high-risk for health problems or for a decline in functioning:

- aged 80 and above,
- difficulty remembering,
- enrollees with emotional problems
- incontinent enrollees;
- enrollees with a high probability of hospitalization[14];
- enrollees with two or more hospital stays in year prior to first interview;
- enrollees with a lack of independence in ADL performance; and,
- enrollees self-reporting health status as "Fair" or "poor"

1. Outcome Measures

The same 39 comparisons described at the beginning of this section were performed for each of the eight high-risk sub-groups, resulting in 312 distinct comparisons. A second set of comparisons was also performed for the complements of each high-risk group; that is, for the set of beneficiaries who were *not* classified as high risk under each group's definition. This brought the total number of comparisons to 624. It is important to bear in mind that membership in the high-risk groups, and especially in the complements of high-risk groups, overlapped substantially. Many of those who reported fair or poor health status also lacked independence in ADL performance and had a high probability of hospital admission.

2. Findings

Of the 624 S/HMO II comparisons performed, only 75, or 12 percent were statistically significant, even at the 0.10 level (Table IV.5). This number of statistically significant comparisons could be expected to occur by chance even if the null hypothesis (that the S/HMO II and comparison group did not differ) were true.

[14] The probability of hospitalization was computed using the Pra score, developed by Boult, Pacala and Boult (1995).

TABLE IV.5
HIGH-RISK GROUPS
COMPARISONS BETWEEN S/HMO II AND COMPARISON GROUP
THAT REACHED STATISTICAL SIGNIFICANCE

Outcome	Risk Group[a]	Estimated S/HMO II Effect	
Physical Health and Functioning, Cognitive Health, Emotional Health			
General Health Improved	Difficulty remembering	7.0	*
General Health Improved or Unchanged	Emotional problems	5.4	*
Memory Improved	Not independent in ADL performance	8.8	*
Memory Improved or Unchanged	Age 80 and over	7.2	***
Memory Improved or Unchanged	Not independent in ADL performance	10.6	***
Memory Improved or Unchanged	Emotional problems	9.5	*
Memory Improved or Unchanged	Incontinent	4.3	*
Memory Improved or Unchanged	High probability of hospitalization	4.2	*
Walking Improved	Difficulty remembering	11.2	**
Walking Improved or Unchanged	Emotional problems	6.0	**
General Health Improved	Age 80 and over	-3.4	*
Frequency of Emotional Problems Improved	Two or more hospital stays in year prior to first interview	-3.4	*
Activities of Daily Living			
Improved Walking at Second Interview Among Those who Reported Difficulty at First Interview	Age 80 and over	8.9	**
Improved Walking at Second Interview Among Those Who Reported Difficulty at First Interview	Fair or poor self-reported health	4.5	*
Improved Toileting at Second Interview Among Those Who Reported No Difficulty at First Interview	Difficulty remembering	1.5	*
Improved Walking at Second Interview Among Those Who Reported No Difficulty at First Interview	Age 80 and over	-3.5	*
Improved Walking at Second Interview Among Those Who Reported No Difficulty at First Interview	Incontinent	-2.1	*
Improved Bathing at Second Interview Among Those Who Reported No Difficulty at First Interview	Emotional problems	-0.2	*
Improved Toileting at Second Interview Among Those Who Reported Difficulty at First Interview	Fair or poor health	-6.9	*
Ability to Prepare Meals at Second Interview Among Those Who Reported No Difficulty at First Interview	Age 80 and over	3.8	**
Ability to Use the Telephone at Second Interview Among Those Who Reported Difficulty at First Interview	Two or more hospital stays in year prior to first interview	29.4	**

TABLE IV.5 (Continued)
HIGH-RISK GROUPS
COMPARISONS BETWEEN S/HMO II AND COMPARISON GROUP
THAT REACHED STATISTICAL SIGNIFICANCE

Outcome	Risk Group[a]	Estimated S/HMO II Effect	
Instrumental Activities of Daily Living			
Ability to Do Housework at Second Interview Among Those Who Reported No Difficulty at First Interview	Age 80 and over	2.0	*
Ability to Do Housework at Second Interview Among Those Who Reported No Difficulty at First Interview	Emotional problems	1.6	*
Ability to Do Housework at Second Interview Among Those Who Reported No Difficulty at First Interview	Incontinent	2.2	***
Ability to Take Medications at Second Interview Among Those Who Reported No Difficulty at First Interview	Two or more hospital stays in year prior to first interview	1.6	*
Ability to Take Medications at Second Interview Among Those Who Reported No Difficulty at First Interview	Not independent in ADL performance	1.1	*
Ability to Take Medications at Second Interview Among Those Who Reported No Difficulty at First Interview	High probability of hospitalization	1.3	*
Difficulty Managing Finances at Second Interview Among Those Who Reported No Difficulty at First Interview	Age 80 and over	4.1	***
Ability to Manage Finances at Second Interview Among Those Who Reported No Difficulty at First Interview	Emotional problems	1.4	**
Shopping at Second Interview Among Those Who Reported No Difficulty at First Interview	Two or more hospital stays in year prior to first interview	-3.9	*
Shopping at Second Interview Among Those Who Reported No Difficulty at First Interview	Not independent in ADL performance	-5.4	*
Ability to Use Transportation at Second Interview Among Those Who Reported Difficulty at First Interview	Not independent in ADL performance	-10.5	*
Ability to Use Transportation at Second Interview Among Those Who Reported Difficulty at First Interview	Fair or poor health	-7.6	*
Ability to Take Medications at Second Interview Among Those Who Reported Difficulty at First Interview	High probability of hospitalization	-14.7	*
Other Outcomes			
Falls	Difficulty remembering	-4.0	***

SOURCE: Mathematica Policy Research survey of risk-plan and S/HMO enrollees of Health Plan of Nevada.

[a]Risk groups are defined on the basis of responses to the first interview.

Note: The numbers shown represent: (percent of S/HMO II group showing improvement or decline) minus (percent of comparison group showing improvement or decline). A positive sign indicates greater improvement or less decline in S/HMO II enrollees; a negative sign indicates greater improvement or less decline in comparison group.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

(a) High Risk Sub-groups

Differences between the S/HMO II and the comparison group were spread broadly across the measures among the individual risk groups. No common theme is obvious in the results, except, perhaps, tendency for outcomes favoring the S/HMO II to appear disproportionately among measures of cognitive health and IADL performance, rather than physical health and ADL performance. Among the eight high-risk groups, the three defined by age (80+), cognition (difficulty remembering), and emotional factors (extremely or always bothered by emotional problems in the past month), accounted for 12 of the 22 significant effects. The five groups defined in terms of physical health and functioning (not independent in ADL performance, high probability of hospital admission, 2+ hospital admissions prior to first interview, incontinent, and fair or poor self-reported health) together accounted for the remaining ten.

(b) Complements of High Risk Sub-groups

A similar lack of any clear pattern of differences was found in the comparisons based on the complements of high risk groups (Table IV.6). However, an unexpected finding was that in the "complement" groups, enrollees in the comparison group were more likely to show improvements in general health than were S/HMO II enrollees.

TABLE IV.6
COMPLEMENTS OF HIGH-RISK GROUPS
COMPARISONS BETWEEN S/HMO II AND COMPARISON GROUP
THAT REACHED STATISTICAL SIGNIFICANCE

Outcome	Risk Group[a]	Estimated S/HMO II Effect	
Physical Health and Functioning, Cognitive Health, Emotional Health			
Memory Improved	No difficulty remembering	2.2	*
Memory Improved	Fewer than two hospital stays in year prior to first interview	2.1	*
Memory Improved or Unchanged	No difficulty remembering	2.6	**
Memory Improved or Unchanged	Fewer than two hospital stays in year prior to first interview	1.6	**
Memory Improved or Unchanged	Low probability of hospitalization	1.4	*
General Health Improved	No difficulty remembering	-2.3	***
General Health Improved	Fewer than two hospital stays in year prior to first interview	-2.0	*
General Health Improved	Independent in ADL performance	-2.3	***
General Health Improved	No emotional problems	-2.0	*
General Health Improved	Not incontinent	-2.4	*
General Health Improved	Low probability of hospitalization	-2.2	**
General Health Improved	Excellent or good health	-1.6	*
Activities of Daily Living			
Ability to Dress at Second Interview Among Those Who Reported No Difficulty at First Interview	No emotional problems	1.0	***
Ability to Do Housework at Second Interview Among Those Who Reported No Difficulty at First Interview	No emotional problems	0.9	**
Ability to Dress at Second Interview Among Those Who Reported Difficulty at First Interview	Fewer than two hospital stays in year prior to first interview	-7.3	*
Instrumental Activities of Daily Living			
Ability to Prepare Meals at Second Interview Among Those Who Reported No Difficulty at First Interview	No difficulty remembering	1.1	***
Ability to Prepare Meals at Second Interview Among Those Who Reported No Difficulty at First Interview	Fewer than two hospital stays in year prior to first interview	1.0	*
Ability to Prepare Meals at Second Interview Among Those Who Reported No Difficulty at First Interview	Independent in ADL performance	1.1	***

TABLE IV.6 (Continued)
COMPLEMENTS OF HIGH-RISK GROUPS
COMPARISONS BETWEEN S/HMO II AND COMPARISON GROUP
THAT REACHED STATISTICAL SIGNIFICANCE

Outcome	Risk Group[a]	Estimated S/HMO II Effect	
Ability to Prepare Meals at Second Interview Among Those Who Reported No Difficulty at First Interview	No emotional problems	1.0	***
Ability to Prepare Meals at Second Interview Among Those Who Reported No Difficulty at First Interview	Not incontinent	1.0	**
Ability to Prepare Meals at Second Interview Among Those Who Reported No Difficulty at First Interview	Low probability of hospitalization	0.8	**
Ability to Prepare Meals at Second Interview Among Those Who Reported No Difficulty at First Interview	Excellent or good health	0.8	**
Ability to Do Housework at Second Interview Among Those Who Reported No Difficulty at First Interview	Under age 80	0.8	**
Ability to Do Housework at Second Interview Among Those Who Reported No Difficulty at First Interview	Independent in ADL performance	1.1	***
Ability to Do Housework at Second Interview Among Those Who Reported No Difficulty at First Interview	No emotional problems	0.9	**
Ability to Do Housework at Second Interview Among Those Who Reported No Difficulty at First Interview	Low probability of hospitalization	0.9	**
Ability to Do Housework at Second Interview Among Those Who Reported No Difficulty at First Interview	Excellent or good health	1.1	***
Ability to Do Housework at Second Interview Among Those Who Reported Difficulty at First Interview	Under age 80	5.2	*
Ability to Do Housework at Second Interview Among Those Who Reported Difficulty at First Interview	No difficulty remembering	5.1	*
Ability to Do Housework at Second Interview Among Those Who Reported Difficulty at First Interview	Not incontinent	7.6	*
Ability to Manage Finances at Second Interview Among Those Who Reported No Difficulty at First Interview	No difficulty remembering	0.6	**
Ability to Manage Finances at Second Interview Among Those Who Reported No Difficulty at First Interview	Fewer than two hospital stays in year prior to first interview	0.6	**
Ability to Manage Finances at Second Interview Among Those Who Reported No Difficulty at First Interview	Independent in ADL performance	0.6	*
Ability to Manage Finances at Second Interview Among Those Who Reported No Difficulty at First Interview	Not incontinent	1.0	***
Ability to Manage Finances at Second Interview Among Those Who Reported No Difficulty at First Interview	Excellent or good health	0.6	**

TABLE IV.6 (Continued)
COMPLEMENTS OF HIGH-RISK GROUPS
COMPARISONS BETWEEN S/HMO II AND COMPARISON GROUP
THAT REACHED STATISTICAL SIGNIFICANCE

Outcome	Risk Group[a]	Estimated S/HMO II Effect
Ability to Take Medication at Second Interview Among Those Who Reported Difficulty at First Interview	Low probability of hospitalization	14.0 *
Ability to Use Transportation at Second Interview Among Those Who Reported Difficulty at First Interview	Under age 80	-8.4 *
Ability to Use Transportation at Second Interview Among Those Who Reported Difficulty at First Interview	No difficulty remembering	-7.5 **
Ability to Use Transportation at Second Interview Among Those Who Reported No Difficulty at First Interview	Fewer than two hospital stays in year prior to first interview	-6.7 *
Ability to Use Transportation at Second Interview Among Those Who Reported No Difficulty at First Interview	Low probability of hospitalization	-8.2 *

SOURCE: Mathematica Policy Research survey of risk-plan and S/HMO II (enrollees of Health Plan of Nevada.

Note: The numbers shown represent: (percent of S/HMO II group showing improvement or decline) minus (percent of comparison group showing improvement or decline). A positive sign indicates greater improvement or less decline in S/HMO II enrollees; a negative sign indicates greater improvement or less decline in comparison group

[a]Risk groups are defined on the basis of responses to the first interview.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

C. ANALYSIS OF POSSIBLE SPILL-OVER EFFECTS

The comparison of S/HMO II enrollees to members of the HPN Medicare risk plan could understate true S/HMO II effects if practices or methods developed by the S/HMO II "spilled over" and were adopted by non-S/HMO II providers in the risk plan comparison clinics. Contact among providers in the S/HMO II and risk plan clinics could have occurred in a variety of ways, the most obvious of which would have been the movement of a provider from a S/HMO II plan to one of the HPN risk plan sites that was part of the comparison group. Spillover effects, if they occurred, would have reduced the number and/or magnitude of differences favorable to the S/HMO II plan when compared to the HPN risk plans. This being the case, one would expect to see more and/or larger differences favoring the S/HMO II when comparison groups are drawn from more distant parts of the country.

In order to test for the presence of spillover effects, outcomes for S/HMO II enrollees were compared with outcomes for certain respondents to the Medicare Current Beneficiary Survey (MCBS) in both 1996 and 1997. The MCBS is an ongoing survey of a nationally representative sample of Medicare beneficiaries carried out by CMS in which approximately 12,000 persons are interviewed at four-month intervals each year. The survey produces detailed information about

the health and functional status of Medicare beneficiaries, and includes those enrolled in fee-for-service (FFS) Medicare as well as those in Medicare risk plans.

The interview developed for the S/HMO II evaluation incorporated seven questions about health and functioning from the MCBS. It was therefore possible to compare outcomes for S/HMO II participants on these seven measures with outcomes for Medicare beneficiaries in other parts of the country who were participating in Medicare risk plans or in the traditional FFS Medicare.

1. Findings

(a) Physical Health and Functioning

The S/HMO II was compared on seven measures of physical health and functioning with both a national sample of Medicare risk plan enrollees (National Risk) and Medicare beneficiaries in FFS Medicare in the Southwest resulting in a total of 14 comparisons (Table IV.7).[15] Seven of the 14 comparisons in the table indicate no differences in outcomes between S/HMO II members and beneficiaries in national risk plans or in FFS Medicare in the Southwest. In particular, there was no evidence that general health either improved or deteriorated at greater rates for S/HMO II members compared to the others. Of the remaining seven comparisons that reached statistical significance, six favored the S/HMO II, and one favored the comparison groups.

[15] Because these comparisons rely on measures that appear in both the HFA and the Medicare Current Beneficiary Survey (MCBS), the set of outcomes is smaller here than in Table IV.2. It was not possible to limit the risk sample to beneficiaries living in the Southwest due to small sample size.

TABLE IV.7
S/HMO, NATIONAL RISK, AND FFS COMPARISONS OF PHYSICAL HEALTH AND FUNCTIONING OUTCOMES

Outcome[a]	Adjusted SHMO II (Percent)	Adjusted National Risk (Percent)	Adjusted South West FFS[b]	S/HMO-Risk		p-Value	S/HMO-FFS		p-Value	N
Physical Health and Functioning										
General Health Improved	27.0	25.9	29.9	1.1		0.542	-2.9		0.110	15,241
General Health Improved or Unchanged	69.8	70.7	72.2	-0.9		0.596	-2.4		0.142	17,795
Ability to Lift Improved	44.9	44.5	41.9	0.4		0.882	3.0		0.298	4,731
Ability to Lift Improved or Unchanged	84.3	78.1	77.9	6.2	***	0.000	6.4	***	0.000	17,390
Walking Improved	34.5	40.0	39.0	-5.5	**	0.500	-4.5		0.112	6,401
Walking Improved or Unchanged	78.9	73.3	75.7	5.6	***	0.001	3.2	**	0.050	16,697
Urine Accidents	16.8	24.1	19.9	7.3	***	0.000	3.1	**	0.028	19,023

SOURCE: Survey of beneficiaries of risk plan and S/HMO operated by Health Plans of Nevada's and the Medicare Current Beneficiary Survey.

NOTE: All mean outcomes are adjusted for differences between S/HMO and risk plan enrollees' demographic and health characteristics at the "first" interview. Adjusted means are estimated using logit models. The analysis is based on a maximum sample size of 19,064, including 12,697 S/HMO, 4,394 HPN risk, 969 national risk, and 1,004 Southwest FFS Medicare beneficiaries.

[a]The analysis sample for health outcomes that improved excludes enrollees who initially reported the highest level of health for an outcome because health could not improve for these individuals. Similarly, the analysis sample for health outcomes that improved or did not worsen excludes enrollees who reported the lowest level of health for an outcome.

[b]The estimated effects are the difference between the adjusted percentage of S/HMO II enrollees with the outcome and the adjusted percent of risk plan enrollees with the outcome. A positive sign indicates greater improvement or less decline in S/HMO II enrollees; a negative sign indicates greater improvement or less decline in comparison group.

* Significantly different from zero at the .10 level, two-tailed test.
** Significantly different from zero at the .05 level, two-tailed test.
*** Significantly different from zero at the .01 level, two-tailed test.

(b) ADLs and IADLs

Measures of ADL and IADL performance for all three groups are shown in Table IV.8. Most differences in ADL performance were statistically insignificant. Of the 11 comparisons that reached significance, eight suggest better outcomes for S/HMO II members than for beneficiaries in the national risk or Southwest FFS populations. For IADL performance, however, the picture was quite different. Except for their greater improvement in managing finances, S/HMO II members tended to exhibit poorer outcomes than did beneficiaries in the other two populations.

TABLE IV.8
S/HMO, NATIONAL RISK, AND FFS COMPARISONS OF FUNCTIONING OUTCOMES

Outcome[a]	Adjusted S/HMO II (Percent)	Adjusted National Risk (Percent)	Adjusted Southwest FFS[b]	S/HMO Vs Risk		S/HMO vs FFS		N
Activities of Daily Living								
Difficulty Bathing, Reported at the Second Interview By Respondents with:								
No Difficulty at "First" Interview	5.5	5.3	4.0	-0.2		-1.5	**	17,405
Difficulty at "First" Interview	66.2	64.2	59.0	-2.0		-7.2	*	1,651
Difficulty Walking at the Second Interview By Respondents with:								
No Difficulty at "First" Interview	8.1	12.9	8.0	+4.8	***	-0.1		16,063
Difficulty at "First" Interview	73.0	68.0	67.0	-5.0		-6.0	*	2,987
Difficulty Ambulating*, Reported at the Second Interview By Respondents with:								
No Difficulty at "First" Interview	4.9	6.1	6.5	+1.2		+1.6	**	17,621
Difficulty at "First" Interview	53.1	62.2	54.3	+9.1	*	+1.2		1,436
Difficulty Eating, Reported at the Second Interview By Respondents with:								
No Difficulty at "First" Interview	1.0	2.8	2.6	+1.8	***	+1.6	***	18,855
Difficulty at "First" Interview	40.7	85.8	58.8	+45.1	***	+18.1	***	204
Difficulty Toileting, Reported at the Second Interview By Respondents with:								
No Difficulty at "First" Interview	2.6	2.7	2.5	+0.1		-0.1		18,463
Difficulty at "First" Interview	57.5	66.3	49.1	+8.8		-8.4		594
Difficulty Dressing, Reported at the Second Interview By Respondents with:								
No Difficulty at "First" Interview	3.2	4.7	3.7	+1.5	**	+0.5		18,131
Difficulty at "First" Interview	63.6	68.8	55.2	+5.7		-8.4		924
Instrumental Activities of Daily Living								
Difficulty Shopping at Second Interview By Respondents with:								
No Difficulty at "First" Interview	6.1	5.1	3.3	-1.0		-2.8	***	16,824
Difficulty at "First" Interview	67.9	52.6	51.9	-15.3	***	-6.0	***	2,226
Difficulty Preparing Meals at Second Interview By Respondents with:								
No Difficulty at "First" Interview	4.6	3.3	2.0	-1.3	*	-2.6	***	17,262
Difficulty at "First" Interview	57.7	58.4	54.8	+0.7		-2.9		1,781

TABLE IV.8 (Continued)
S/HMO, NATIONAL RISK, AND FFS COMPARISONS OF FUNCTIONING OUTCOMES

Outcome[a]	Adjusted S/HMO II (Percent)	Adjusted National Risk (Percent)	Adjusted Southwest FFS[b]	S/HMO vs Risk		S/HMO vs FFS		N
Difficulty Using the Phone, Reported at the Second Interview By Respondents with:								
No Difficulty at "First" Interview	3.8	1.8	2.5	-2.0	***	-1.3	**	17,935
Difficulty at "First" Interview	60.7	47.0	43.6	-13.7		-17.1	***	1,118
Difficulty Doing Housework, Reported at the Second Interview By Respondents with:								
No Difficulty at "First" Interview	4.7	4.0	3.8	-0.7		-0.9	**	17,399
Difficulty at "First" Interview	54.5	56.2	56.3	+1.7		+1.8		1,649
Difficulty Managing Finances, Reported at the Second Interview By Respondents with:								
No Difficulty at "First" Interview	2.6	4.2	4.8	+1.6	***	+2.2	***	17,453
Difficulty at "First" Interview	49.6	62.2	56.7	+12.6	*	+7.1	*	1,590

SOURCE: Survey of Health Plans of Nevada's risk plan and S/HMO beneficiaries and the Medicare Current Beneficiary Survey.

NOTE: All mean outcomes are adjusted for differences between S/HMO and risk plan enrollees' demographic and health characteristics at the "first" interview. Adjusted means are estimated using logit models. The analysis is based on a maximum sample size of 19,064, including 12,697 S/HMO, 4,394 HPN risk, 969 national risk, and 1,004 Southwest FFS Medicare beneficiaries.

[a]Enrollees were assumed to have difficulty with an activity of daily living or an instrumental activity of daily living if they reported difficulty performing the activity by themselves and either (1) reported difficulty because of health or physical problems or
(2) received help from another person to perform the activity.

[b]The estimated effects represent the difference between the adjusted percentage of S/HMO II enrollees with the outcome and the adjusted percentage of risk plan enrollees with the outcome. A positive sign indicates greater improvement or less decline in S/HMO II enrollees; a negative sign indicates greater improvement or less decline in comparison group. All figures are rounded to the nearest tenth of a percent.

[c]Ambulating includes not only walking, but also getting around with the assistance of a wheelchair or walker.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

D. DISCUSSION

There is no clear pattern in results from the hundreds of comparisons that suggests a definitive beneficial effect of enrollment in the S/HMO II plan on health or functioning. Almost 90 percent of the comparisons between S/HMO II members and HPN risk plan members and between S/HMO II members and sub-samples of beneficiaries drawn from the MCBS failed to reach statistical significance at the 0.10 level.

Although some comparisons indicated statistically significant, positive S/HMO II effects, these tended to be haphazardly distributed across outcomes and did not appear with sufficient frequency to indicate the effects were real and not simply the result of performing large numbers of tests. Moreover, these findings were counter-balanced to some degree by a smaller number of statistically significant estimates indicating better outcomes in the comparison groups.

Moreover, there was no consistent evidence that beneficial S/HMO II effects were masked by spillover effects on non-S/HMO II providers. Comparisons of outcomes for S/HMO II enrollees with outcomes for enrollees in a national sample of Medicare risk plans and in a sample of beneficiaries in Medicare fee-for-service in the Southwestern U.S. produced mixed results, with no clear evidence of spillover effects for S/HMO II members.

In summary, these results are not persuasive evidence that enrollees in the S/HMO II demonstration fared any better than their counter-parts in other Medicare risk plans or in traditional Medicare FFS practice in improvements in health or functional status.

V. S/HMO II AND THE UTILIZATION OF MEDICARE SERVICES

A. METHODS

The S/HMO II plan provides extended benefits only to the frailest members. About 27 percent of S/HMO II members received either a special evaluation or expanded services in 1998.

Because a minority of members receive extended benefits from the S/HMO II, its effect on the utilization of hospital, skilled and custodial nursing home, physician, and home health services is expected to be concentrated in this sub-group. The effects on the larger S/HMO population is expected to be relatively limited.

Five categories of service were studied: hospital, skilled nursing home, custodial nursing home[16], physician, and home health. For each type of service, separate comparisons were made of S/HMO II with risk plan enrollees for each of the four subgroups described earlier in Table I.3: community sample/22 months of follow-up; community sample/less than 22 months of follow-up; nursing home sample/22 months of follow-up; nursing home sample/less than 22 months of follow-up (Tables V.1 and V.2). In addition to comparisons involving the larger S/HMO II and risk group samples, analyses were performed using sub-groups of medically at-risk enrollees where the S/HMO II intervention should have had the greatest impact.

[16] Although HPN was not at risk for most custodial care services, this category of care was included in the analysis because some of the S/HMO II benefits – such as the geriatric team case management and primary care for long-term nursing home residents – were expected to reduce amount of custodial care required by beneficiaries.

TABLE V.1
DEMOGRAPHIC CHARACTERISTICS OF S/HMO II AND RISK PLAN MEMBERS BY LENGTH OF FOLLOWUP: COMMUNITY SAMPLES

Characteristics	22 Months of Followup		Less than 22 Months of Followup	
	S/HMO	Risk Plan	S/HMO	Risk Plan
Percent female	55.4	54.5	51.2	51.6
Age (Percent Distribution)				
Less than 65	6.4	6.9	7.3	6.5
Age 65 – 69	29.2	31.9	25.4	28.1
Age 70 – 74	30.7	28.9	27.1	25.7
Age 75 – 79	19.7	19.6	20.0	20.0
Age 80 – 84	9.5	9.1	12.2	12.0
Age 85 and over	4.5	3.6	8.1	7.7
Average age (years)	72.6	72.1	73.4	73.4
Race/Ethnicity (Percent Distribution)				
White	88.7	91.0	87.9	90.9
African American	6.5	4.0	7.4	3.8
Hispanic	1.8	1.4	1.6	1.4
Other	3.0	3.7	3.1	3.9
Percent Medicaid eligible	2.8	2.3	4.4	2.9
Percent initially entitled due to disability	9.8	10.0	12.1	12.3
Percent with hospitalizations in prior 12 months				
None	90.6	90.5	86.4	86.3
One	8.0	7.9	10.9	10.9
Two or more	1.5	1.6	2.7	2.8
Percent with skilled nursing home days in prior 12 months				
None	100.0	100.0	100.0	100.0
1 to 30	0.0	0.0	0.0	0.0
31 to 180	0.0	0.0	0.0	0.0
181 to 366	0.0	0.0	0.0	0.0
Percent with custodial nursing home days in prior 12 months				
None	100.0	100.0	100.0	100.0
1 to 30	0.0	0.0	0.0	0.0
31 to 180	0.0	0.0	0.0	0.0
181 to 366	0.0	0.0	0.0	0.0
Percent who died during follow-up period	NA	NA	39.9	35.4
Number of observations	13,642	4,153	3,277	1,058

SOURCE: Medicare Enrollment Database and Medicare claims records and Health Plan of Nevada administrative data files.

NOTE: Members as of July 1, 1997. Samples exclude End-Stage Renal Disease (ESRD) beneficiaries and all individuals who received care in a skilled nursing, custodial care, or congregate living facility during July 1997, the first month of the follow-up period.

TABLE V.2
DEMOGRAPHIC CHARACTERISTICS OF S/HMO II AND RISK PLAN MEMBERS BY LENGTH OF FOLLOWUP: NURSING HOME SAMPLES

Characteristics	22 Months of Follow-up		Less than 22 Months of Follow-up	
	S/HMO	Risk Plan	S/HMO	Risk Plan
Percent female	64.8	59.1	60.1	52.5
Age (Percent Distribution)				
Less than 65	7.5	7.6	4.2	7.5
Age 65 – 69	17.7	18.1	10.7	10.0
Age 70 – 74	19.7	29.5	21.4	17.5
Age 75 – 79	25.0	17.1	19.6	22.5
Age 80 – 84	19.4	16.2	29.8	25.0
Age 85 and over	10.7	11.4	14.3	17.5
Average age (years)	75.7	75.3	77.4	77.1
Race/Ethnicity (Percent Distribution)				
White	91.5	93.3	87.5	92.5
African American	6.8	3.8	9.5	2.5
Hispanic	0.7	1.9	0.0	0.0
Other	1.0	1.0	3.0	5.0
Percent Medicaid eligible	5.6	3.8	8.9	2.5
Percent initially entitled due to disability	13.4	14.3	15.5	20.0
Percent with hospitalizations in prior 12 months				
None	16.3	11.4	20.8	10.0
One	55.6	64.8	47.6	60.0
Two or more	28.2	23.8	31.6	30.0
Percent with skilled nursing home days in prior 12 months				
None	2.2	1.9	6.0	2.5
1 to 30	90.0	96.2	82.7	87.5
31 to 180	7.8	1.9	10.1	7.5
181 to 366	0.0	0.0	1.2	2.5
Percent with custodial nursing home days in prior 12 months				
None	96.4	97.1	95.8	100.0
1 to 30	1.0	2.9	2.4	0.0
31 to 180	2.2	0.0	1.8	0.0
181 to 366	0.5	0.0	0.0	0.0
Percent who died during follow-up period	NA	NA	72.0	65.0
Number of observations	412	105	168	40

SOURCE: Medicare Enrollment Database and Medicare claims records and Health Plan of Nevada administrative data files.

NOTE: Members as of July 1, 1997. Samples exclude End-Stage Renal Disease (ESRD) beneficiaries and all individuals who received care in a skilled nursing, custodial care, or congregate living facility during July 1997, the first month of the follow-up period.

As previously noted in Chapter 1, there was a disproportionate enrollment of nursing home residents into the S/HMO II. To prevent bias in estimates of the S/HMO II effect arising from the preferential assignment of long-term nursing home patients to the S/HMO II, analyses were performed separately for those who received some nursing home care in the 12 months prior to July, 1997, and for those who did not. All analyses adjusted for differences between the S/HMO II and risk plan populations in age, race, gender , Medicaid enrollment, original basis of Medicare eligibility, and number of hospital admissions in the pre-analysis period.

B. RESULTS

Hospital Services: In the community/22 month follow-up sample - the largest of the four samples studied, S/HMO II members were less likely to be hospitalized than beneficiaries enrolled in the risk plan Table V.3) . The difference was small – 21.0 percent of S/HMO II members versus 22.5 percent of risk plan members – but was statistically significant ($p = 0.03$). Among those with less than 22-months of follow-up, S/HMO II members were hospitalized *more* often than risk plan members (56.6 percent versus 52.5 percent). In both of the nursing home samples, admission rates for S/HMO II enrollees were lower than for the comparison samples, although neither of these differences was statistically significant.

TABLE V.3
SERVICE UTILIZATION BY S/HMO II AND RISK PLAN MEMBERS: HOSPITAL CARE

	S/HMO	Risk Plan		N	*p*-Value
Outcome: Percent with one or more hospital stays					
Beneficiaries with no nursing home care					
July 1996 – June 1997					
Full 22 month follow-up	21.0	22.5	**	17,795	0.03
Less than 22-month follow-up	56.6	52.5	**	4,335	0.05
Beneficiaries with any nursing home care					
July 1996 – June 1997					
Full 22 month follow-up	39.5	43.9		517	0.41
Less than 22-month follow-up	84.0	87.7		208	0.56
Outcome: Mean hospital days (for those with one or more hospital stays)					
Beneficiaries with no nursing home care					
July 1996 – June 1997					
Full 22 month follow-up	7.6	7.3		3,812	0.41
Less than 22-month follow-up	27.1	26.0		1,468	0.64
Beneficiaries with any nursing home care					
July 1996 – June 1997					
Full 22 month follow-up	8.9	13.9	***	210	0.01
Less than 22-month follow-up	41.0	53.2		125	0.49

SOURCE: Health Plan of Nevada administrative data files from July 1, 1997 through April 30, 1999.

NOTE: Samples include all members as of July 1, 1997. Samples exclude End-Stage Renal Disease (ESRD) beneficiaries and all individuals in a skilled nursing, custodial care, or congregate living facility during July 1997, the first month of the follow-up period. All measures have been adjusted for gender, age, race/ethnicity, Medicaid status, initial reason for eligibility, and hospital admissions in the 12 months prior to the follow-up period.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

For beneficiaries admitted to hospitals, there were no significant differences between the S/HMO II and risk plan enrollees in average hospital days for either of the community follow-up groups. For the nursing home/22 month follow-up sample, however, the mean number of hospital days was significantly lower for S/HMO II than for risk plan members.

Skilled Nursing Home Services: Encounter data furnished by HPN identified five types of nursing home services: skilled nursing care, custodial care, congregate group living, sub-acute care, and nursing home-based respite care. The following analysis focuses on skilled nursing care, which also includes skilled rehabilitation care. (Table V.4)

TABLE V.4
SERVICE UTILIZATION BY S/HMO II AND RISK PLAN MEMBERS: SKILLED NURSING HOME CARE

	S/HMO	Risk Plan		N	*p*-Value
Outcome: Percent with one or more skilled nursing home stays					
Beneficiaries with no nursing home care July 1996 – June 1997					
Full 22 month follow-up	6.1	5.4	*	17,795	0.09
Less than 22-month follow-up	27.3	22.3	***	4,335	0.01
Beneficiaries with any nursing home care July 1996 – June 1997					
Full 22 month follow-up	21.3	22.1		517	0.85
Less than 22-month follow-up	60.0	54.5		208	0.61
Outcome: Mean skilled nursing home days (for those with one or more skilled nursing home stays)					
Beneficiaries with no nursing home care July 1996 – June 1997					
Full 22 month follow-up	17.4	15.4		1,051	0.25
Less than 22-month follow-up	18.2	17.9		629	0.88
Beneficiaries with any nursing home care July 1996 – June 1997					
Full 22 month follow-up	17.9	23.5		111	0.25
Less than 22-month follow-up	22.4	50.2	***	72	0.01

SOURCE: Health Plan of Nevada administrative data files from July 1, 1997 through April 30, 1999.

NOTE: Samples include all members as of July 1, 1997. Samples exclude End-Stage Renal Disease (ESRD) beneficiaries and all individuals in a skilled nursing, custodial care, or congregate living facility during July 1997, the first month of the follow-up period. All measures have been adjusted for gender, age, race/ethnicity, Medicaid status, initial reason for eligibility, and hospital admissions in the 12 months prior to the follow-up period.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

S/HMO II members in both community samples were more likely to be admitted to skilled nursing homes during the demonstration period than were risk plan members. In the 22-month follow-up sample, 6.1 percent of S/HMO II members and 5.4 percent of risk plan members were admitted for one or more skilled nursing home stays. In the sample with less than 22 months of follow-up, 27.3 percent of S/HMO II members and 22.3 percent of risk plan members were admitted to skilled nursing home care. These differences were significant at the .05 and .10 levels respectively. Once admitted, there were no significant differences in the number of days of care.

In the much smaller nursing-home samples, there was no evidence that S/HMO II membership altered the probability of admission to skilled nursing home care during the follow-up period. Once admitted, however, membership in the S/HMO II was associated with fewer days of care. In the nursing home/less than 22 months follow-up sample, S/HMO II members had, on average, 28 fewer days of care compared to their risk-plan counterparts. A smaller and statistically insignificant reduction in days of care was observed in the nursing home/22 months follow-up sample. Given the small sample size and the heterogeneous nature of the samples with shorter follow-up periods, this result may be anomalous.

Custodial Nursing Home Services: Although HPN was not at risk for custodial nursing home care, many of the S/HMO II benefits that improve the functioning of members and attend to their long-term care needs may reduce the need for custodial nursing services. However, because custodial care is rarely needed in Medicare HMO populations in general, and because only the frailest S/HMO II members receive an evaluation or expanded services (approximately 27 percent in 1998), any impact on this type of service is likely to be isolated among a small group of members.

The analysis found no significant impact of S/HMO II membership on the incidence and use of custodial nursing home services in either the community or nursing home samples (Table V.5). The number of members admitted to custodial care was small enough to make it difficult to detect an actual effect of the S/HMO II intervention even if one were present.

TABLE V.5
SERVICE UTILIZATION BY S/HMO II AND RISK PLAN MEMBERS:
CUSTODIAL NURSING HOME CARE

	S/HMO	Risk Plan	N	*p*-Value
Outcome: Percent with one or more custodial nursing home stays				
Beneficiaries with no nursing home care July 1996 – June 1997				
Full 22 month follow-up	0.4	0.4	17,795	0.86
Less than 22-month follow-up	3.8	3.8	4,335	0.98
Beneficiaries with any nursing home care July 1996 – June 1997				
Full 22 month follow-up	2.7	1.0	517	0.33
Less than 22-month follow-up	--	--	208	--
Outcome: Mean custodial nursing home days (for those with one or more custodial nursing home stays)				
Beneficiaries with no nursing home care July 1996 – June 1997				
Full 22 month follow-up	158.0	202.3	74	0.39
Less than 22-month follow-up	87.7	115.3	86	0.42
Beneficiaries with any nursing home care July 1996 – June 1997				
Full 22 month follow-up	--	--	12	--
Less than 22-month follow-up	--	--	10	--

SOURCE: Health Plan of Nevada administrative data files from July 1, 1997 through April 30, 1999.

NOTE: Samples include all members as of July 1, 1997. Samples exclude End-Stage Renal Disease (ESRD) beneficiaries and all individuals in a skilled nursing, custodial care, or congregate living facility during July 1997, the first month of the follow-up period. All measures have been adjusted for gender, age, race/ethnicity, Medicaid status, initial reason for eligibility, and hospital admissions in the 12 months prior to the follow-up period.

* Significantly different from zero at the .10 level, two-tailed test
** Significantly different from zero at the .05 level, two-tailed test.
*** Significantly different from zero at the .01 level, two-tailed test.
-- Adjusted means could not be computed due to very small sample size for the S/HMO II group.

Physician visits: Members of the S/HMO II plan received more physician visits, in the physician's office or elsewhere, than did members of the risk plan (Table V.6). S/HMO II members in the community/22 month follow-up sample, received a greater number of visits (14.2) than did risk plan members (13.3). While statistically significant, the differences may not be clinically meaningful. Differences were somewhat greater in the community/less than 22 month follow-up sample. S/HMO II members received 26.1 physician visits compared to 21.6 visits for risk plan members. All of the foregoing differences were statistically significant ($p<.01$).

TABLE V.6
SERVICE UTILIZATION BY S/HMO II AND RISK PLAN MEMBERS: PHYSICIAN CARE

	S/HMO	Risk Plan		N	*p*-Value
Outcome: Mean number of physician office visits					
Beneficiaries with no nursing home care July 1996 – June 1997					
Full 22 month follow-up	11.3	10.6	***	17,795	0.01
Less than 22-month follow-up	12.7	10.9	***	4,335	0.01
Beneficiaries with any nursing home care July 1996 – June 1997					
Full 22 month follow-up	15.4	15.4		517	0.99
Less than 22-month follow-up	17.3	17.8		208	0.87
Outcome: Mean number of total physician visits (any location)					
Beneficiaries with no nursing home care July 1996 – June 1997					
Full 22 month follow-up	14.2	13.3	***	17,795	0.01
Less than 22-month follow-up	26.1	21.6	***	4,335	0.01
Beneficiaries with any nursing home care July 1996 – June 1997					
Full 22 month follow-up	28.6	26.3		517	0.54
Less than 22-month follow-up	51.3	72.6	*	208	0.08

SOURCE: Health Plan of Nevada administrative data files from July 1, 1997 through April 30, 1999.

NOTE: Samples include all members as of July 1, 1997. Samples exclude End-Stage Renal Disease (ESRD) beneficiaries and all individuals in a skilled nursing, custodial care, or congregate living facility during July 1997, the first month of the follow-up period. All measures have been adjusted for gender, age, race/ethnicity, Medicaid status, initial reason for eligibility, and hospital admissions in the 12 months prior to the follow-up period.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

In contrast to findings for the community samples, the S/HMO II did not differ from the risk plan in the number of physician visits provided to nursing home residents. The risk plan actually

provided *more* physician visits to members observed for less than 22 months than did the S/HMO II, a result that approached statistical significance (p. <.08).

Home health services: For members who were community dwellers throughout the pre-demonstration period, the results are clear (Table V.7). Those who were observed for 22 months were somewhat more likely, and those observed for less than 22 months were much more likely to receive home health care if they belonged to the S/HMO II than if they belonged to the risk plan. Both differences were significant at the .01 level. Enrollees in the nursing home/22 month follow-up sample were also more likely to receive home care or extended services than were members of the risk plan, although this difference only approached statistical significance.

TABLE V.7
SERVICE UTILIZATION BY S/HMO II AND RISK PLAN MEMBERS: HOME HEALTH CARE

	S/HMO	Risk Plan		N	*p*-Value
Outcome: Percent using home health care					
Beneficiaries with no nursing home care					
July 1996 – June 1997					
Full 22 month follow-up	12.3	10.8	***	17,795	0.01
Less than 22-month follow-up	40.0	29.3	***	4,335	0.01
Beneficiaries with any nursing home care					
July 1996 – June 1997					
Full 22 month follow-up	40.0	35.5		517	0.40
Less than 22-month follow-up	81.9	84.8		208	0.65
Outcome: Percent using home health care or S/HMO II extended care services					
Beneficiaries with no nursing home care					
July 1996 – June 1997					
Full 22 month follow-up	15.2	11.3	***	17,795	0.01
Less than 22-month follow-up	42.3	29.3	***	4,335	0.01
Beneficiaries with any nursing home care					
July 1996 – June 1997					
Full 22 month follow-up	46.7	36.8	*	517	0.07
Less than 22-month follow-up	82.3	83.1		208	0.89

SOURCE: Health Plan of Nevada administrative data files from July 1, 1997 through April 30, 1999.

NOTE: Samples include all members as of July 1, 1997. Samples exclude End-Stage Renal Disease (ESRD) beneficiaries and all individuals in a skilled nursing, custodial care, or congregate living facility during July 1997, the first month of the follow-up period. All measures have been adjusted for gender, age, race/ethnicity, Medicaid status, initial reason for eligibility, and hospital admissions in the 12 months prior to the follow-up period.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

At-risk Subgroup: Because S/HMO II services are targeted at persons at higher risk of poor outcomes, a separate analysis was conducted on a subgroup of beneficiaries whose utilization was expected to be high: those who were hospitalized two or more times in the 12 months prior to July, 1997. The effect of the S/HMO II on hospitalization in this group was substantial. Just over 50 percent of S/HMO II members in the group were hospitalized again during the follow-up period, compared to 66 percent of similar risk-plan members. However, there was no evidence, in this sub-group of an effect of the S/HMO II intervention on the utilization of skilled nursing home services.

TABLE V.8
SERVICE UTILIZATION BY S/HMO II AND RISK PLAN MEMBERS WITH MULTIPLE HOSPITALIZATIONS IN THE PRE-DEMONSTRATION PERIOD: HOSPITAL AND NURSING HOME CARE

	S/HMO	Risk Plan		N	*p*-Value
Percent with one or more hospital stays					
Beneficiaries with no nursing home care July 1996 – June 1997 Full 22 month follow-up	51.0	65.55	**	267	0.04
Beneficiaries with any nursing home care July 1996 – June 1997 Full 22 month follow-up	46.0	66.55	**	141	0.05
Mean hospital days (for those with one or more hospital stays)					
Beneficiaries with no nursing home care July 1996 – June 1997 Full 22 month follow-up	12.2	11.22		148	0.73
Beneficiaries with any nursing home care July 1996 – June 1997 Full 22 month follow-up	11.9	22.88	**	71	0.03
Percent with one or more skilled nursing home stays					
Beneficiaries with no nursing home care July 1996 – June 1997 Full 22 month follow-up	16.1	16.22		267	0.98
Beneficiaries with any nursing home care July 1996 – June 1997 Full 22 month follow-up	22.3	32.88		141	0.26
Mean skilled nursing home days (for those with one or more skilled nursing home stays)					
Beneficiaries with no nursing home care July 1996 – June 1997 Full 22 month follow-up	27.7	16.22		43	0.63
Beneficiaries with any nursing home care July 1996 – June 1997 Full 22 month follow-up	20.8	39.88		34	0.15

SOURCE: Health Plan of Nevada administrative data files from July 1, 1997 through April 30, 1999.

NOTE: Samples include all members as of July 1, 1997 who had two or more hospital stays during the 12-month period (July 1996-June 1997) preceding the follow-up period. Samples exclude End-Stage Renal Disease (ESRD) beneficiaries and all individuals in a skilled nursing, custodial care, or congregate living facility during July 1997, the first month of the follow-up period. All measures have been adjusted for gender, age, race/ethnicity, Medicaid status, initial reason for eligibility, and hospital admissions in the 12 months prior to the follow-up period.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.

TABLE V.9
SERVICE UTILIZATION BY S/HMO II AND RISK PLAN MEMBERS WITH FEWER THAN TWO HOSPITALIZATIONS IN THE PRE-DEMONSTRATION PERIOD: HOSPITAL AND NURSING HOME CARE

	S/HMO	Risk Plan		N	*p*-Value
Percent with one or more hospital stays					
Beneficiaries with no nursing home care July 1996 – June 1997 Full 22 month follow-up	20.5	21.9	*	17,528	0.06
Beneficiaries with any nursing home care July 1996 – June 1997 Full 22 month follow-up	37.1	36.4		376	0.91
Mean hospital days (for those with one or more hospital stays)					
Beneficiaries with no nursing home care July 1996 – June 1997 Full 22 month follow-up	7.4	7.2		3,664	0.41
Beneficiaries with any nursing home care July 1996 – June 1997 Full 22 month follow-up	7.4	9.0		139	0.26
Percent with one or more skilled nursing home stays					
Beneficiaries with no nursing home care July 1996 – June 1997 Full 22 month follow-up	5.9	5.2	*	17,528	0.08
Beneficiaries with any nursing home care July 1996 – June 1997 Full 22 month follow-up	20.7	19.5		376	0.81
Mean skilled nursing home days (for those with one or more skilled nursing home stays)					
Beneficiaries with no nursing home care July 1996 – June 1997 Full 22 month follow-up	17.0	15.4		1,008	0.32
Beneficiaries with any nursing home care July 1996 – June 1997 Full 22 month follow-up	16.1	16.8		77	0.90

SOURCE: Health Plan of Nevada administrative data files from July 1, 1997 through April 30, 1999.

NOTE: Samples include all members as of July 1, 1997 who had one or fewer hospital stays during the 12-month period (July 1996-June 1997) preceding the follow-up period. Samples exclude End-Stage Renal Disease (ESRD) beneficiaries and all individuals in a skilled nursing, custodial care, or congregate living facility during July 1997, the first month of the follow-up period. All measures have been adjusted for gender, age, race/ethnicity, Medicaid status, initial reason for eligibility, and hospital admissions in the 12 months prior to the follow-up period.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.

C. DISCUSSION

The utilization patterns reported here are somewhat unexpected. Proponents of programs such as S/HMO II have suggested that the cost of providing more intensive physician care or expanded community-based services such as home health care, transportation, and personal care services may be offset by reduced utilization of more costly hospital services. If present, we would expect to find this effect most evident in the more medically frail enrollees who were targeted for active intervention, and much less evident in the larger population that was not. We did, indeed, find increased use of physician and home health services on the part of S/HMO II enrollees in comparison to their risk plan counterparts, but this effect was present only in the relatively healthy community sample. We did not, find clear evidence of a corresponding reduction in the use of hospital services among the S/HMO II enrollees in this group. The probability of a hospital admission was slightly lower in the community sample with 22 months of follow-up, but hospital admissions were slightly higher in the community sample with less than 22 months of follow-up. There were no differences between the S/HMO II and risk plan enrollees in the average number of hospital days.

The findings for the two sub-groups of medically frail enrollees - the nursing home sample, and the small sample of enrollees with two or more hospitalizations in the 12 months prior to the evaluation period - also ran counter to expectations. On the one hand, there was a clear trend toward reduced use of hospital services but, somewhat surprisingly, there was no evidence of an increase in the number of physician visits and only a non-significant increase in the use of home health services.

The impact of the S/HMO II on use of custodial nursing home care cannot be estimated reliably from the data available to this study. The number of custodial nursing home admissions during the demonstration was so small that differences between the S/HMO II and the risk plans are statistically unreliable.

In broad outline, the results presented here do not differ greatly from those of Newcomer et al. (1995) in their earlier evaluation of the initial S/HMO I sites. The absence of strong overall effects may be due in part to the limits imposed by the data and by the demonstration itself. A substantial reduction in the probability of hospitalization *was* observed for S/HMO II members in a small high-risk group. However, this group constituted slightly less than 1 percent of the S/HMO II population and there is no evidence to suggest that the decrease might have been the result of more intensive physician and home health services provided through the S/HMO II.

VI. EFFECTS OF S/HMO II ON THE QUALITY OF CARE

A. METHODS

DESIRED OUTCOME MEASURES FOR THIS ANALYSIS THAT WERE SUPPORTED BY EVIDENCE OR EXPERT CONSENSUS AS BEING VALID QUALITY OF CARE INDICATORS, WERE FEASIBLE IN THE DATA AVAILABLE, AND WERE LIKELY TO BE POSITIVELY AFFECTED BY S/HMO II. THE OUTCOME MEASURES SELECTED FELL INTO THREE GENERAL CATEGORIES: (1) ROUTINE GENERAL PREVENTIVE CARE, (2) CARE FOR MEMBERS WITH CHRONIC CONDITIONS, AND (3) POTENTIALLY AVOIDABLE HOSPITAL CONDITIONS (PAHCS) - HOSPITAL ADMISSIONS FOR CONDITIONS THAT GENERALLY SHOULD BE PREVENTABLE WITH TIMELY, COMPETENT OUTPATIENT CARE. BECAUSE THE DATA FOR EACH COMPARISON GROUP CAME FROM A VARIETY OF DIFFERENT SOURCES, AND EACH COMPARISON GROUP SAMPLE WAS CONSTRUCTED DIFFERENTLY, IT WAS NOT POSSIBLE TO COMPARE ALL OF THE MEASURES ACROSS ALL OF THE GROUPS.

To study the S/HMO II effects on quality of care a number of quasi-experimental comparisons of S/HMO II to other groups was performed. The comparisons draw on several different groups and several different data sources. To assist the reader, this information is summarized in Table VI.1.

TABLE VI.1
QUALITY OF CARE OUTCOME MEASURES, DATA SOURCES, AND COMPARISON GROUPS

	HPN Risk	Las Vegas FFS	Southwest FFS	PacifiCare	Hometown Health Plan	Overall Medicare HMO Rate for NV	Nevada Medicare FFS	Table
Routine General Preventive Care								
Physician visit in past year	Encounter	Claims	MCBS Claims					VI.3
Mammography within the past year	Encounter	Claims	MCBS Claims					
Self-reported mammography in past two years	MPR Survey							
Self-reported influenza vaccination in past year	MPR Survey							
Physician visit in past year	HEALTH PLAN COMPARE			HEALTH PLAN COMPARE	HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	HEALTH PLAN COMPARE	VI.4
Mammography in past two years	HEALTHPLAN COMPARE			HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	
Influenza vaccination in past year	HEALTHPLAN COMPARE			HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	
Chronic Illness Care								
Diabetes								VI.5
At least one visit within 6 months	Encounter	Claims	MCBS Claims					
At least one visit every six months over 12 months	Encounter	Claims	MCBS Claims					
At least one visit every six months over 18 months	Encounter	Claims	MCBS Claims					
Chronic Obstructive Pulmonary Disease (COPD)								
At least one visit within 6 months	Encounter	Claims	MCBS Claims					
At least one visit every six months over 12 months	Encounter	Claims	MCBS Claims					
At least one visit every six months over 18 months	Encounter	Claims	MCBS Claims					
Congestive Heart Failure (CHF)								
At least one visit within 6 months	Encounter	Claims	MCBS Claims					
At least one visit every six months over 12 months	Encounter	Claims	MCBS Claims					
At least one visit every six months over 18 months	Encounter	Claims	MCBS Claims					

TABLE VI.1 (Continued)
QUALITY OF CARE OUTCOME MEASURES, DATA SOURCES, AND COMPARISON GROUPS

	HPN Risk	Las Vegas FFS	Southwest FFS	PacifiCare	Hometown Health Plan	Overall Medicare HMO Rate for NV	Nevada Medicare FFS	Table
Follow-Up After Hospital Discharge								
Visit within four weeks of hospital discharge for diabetes	Encounter	Claims	MCBS Claims					VI.5
Visit within four weeks of hospital discharge for CHF	Encounter	Claims	MCBS Claims					
Visit within four weeks of hospital discharge for depression	Encounter	Claims	MCBS Claims					
Diabetes								VI.6
Received hemoglobin A1c	HEALTHPLAN COMPARE			HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	HEALTHPLAN COMPARE		
Received eye exam	HEALTHPLAN COMPARE			HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	HEALTHPLAN COMPARE		
Received blood lipid test	HEALTHPLAN COMPARE			HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	HEALTHPLAN COMPARE		
Heart Attack								
Received beta-blocker medication	HEALTHPLAN COMPARE			HEALTHPLAN COMPARE	HEALTHPLAN COMPARE	HEALTHPLAN COMPARE		
Potentially Avoidable Hospital Conditions								VI.7 VI.8 VI.9
Cellulitis	Encounter	Claims	MCBS Claims					
Pneumonia	Encounter	Claims	MCBS Claims					
Kidney/urinary tract infections	Encounter	Claims	MCBS Claims					
Congestive heart failure	Encounter	Claims	MCBS Claims					
Diabetes in patients with diabetes	Encounter	Claims	MCBS Claims					
Respiratory complications in patients with COPD	Encounter	Claims	MCBS Claims					

SOURCE: Encounter = HPN's administrative encounter data.
Claims = Medicare claims data
MCBS Claims = Medicare claims data from the 1996 and 1997 MCBS Cost and Use Files
HEALTHPLAN COMPARE = HEDIS data from CMS's Medicare HEALTHPLAN Compare

NOTE: For the purposes of this analysis, Southwest includes Nevada, Utah, Colorado, Arizona, and New Mexico.

As in previous chapters, the majority of comparisons evaluated the S/HMO II versus the HPN risk plan and relied on encounter and HFA data. However, the availability of Medicare claims data - either directly from CMS claims files or indirectly from the claims data contained in the MCBS Cost and Use files - allowed many of the comparisons to include Medicare FFS practice in both the Las Vegas area and in a larger area comprising five southwestern states. Finally, the availability of HEDIS data permitted a limited number of comparisons between the S/HMO II and three different sets of Medicare risk plans - local Medicare risk plans (Las Vegas area), Nevada Medicare risk plans, and Medicare risk plans nationwide.

B. OUTCOME MEASURES AND FINDINGS

1. Baseline Differences in the Comparison Groups

As Table VI.2 shows, there were some important demographic differences between S/HMO II and the three other comparison groups. Relative to the HPN risk plan sample group, the S/HMO II population is slightly older. The S/HMO II group is also somewhat more likely to be low-income, as reflected by the higher proportion with Medicaid buy-in (Medicaid payment of Medicare premiums and cost-sharing provisions), and has more African American and Hispanic enrollees (Table VI.2).

TABLE VI.2
BASELINE CHARACTERISTICS OF CONTROL VARIABLES FOR S/HMO II, HPN RISK PLAN, AND LAS VEGAS FFS SAMPLES

	S/HMO II (20,821)	HPN RISK (6,425)		LV FFS (20,885)		SW FFS (582)[c,d]	
Female	54.9	53.8		51.8	***	54.0	
Age (Years)[a]							
Younger than 65	7.6	8.0		13.8		13.1	
65 to 69	28.2	30.7		24.8		22.1	
70 to 74	28.6	27.5		26.6		22.1	
75 to 79	19.2	19.0		18.4		19.3	
80 to 84	10.3	9.7		10.1		13.0	
85 or older	6.1	5.1	***	6.2	***	10.7	
Race[a]							
White	88.0	90.2		87.5		89.2	
Black	7.1	4.3		6.7		6.0	
Hispanic	1.7	1.5		2.0		2.5	
Other	3.3	4.0	***	3.9	***	2.3	
Chronic Conditions							
Diabetes	10.0	9.7		11.2	***	12.2	
COPD	6.6	5.8	**	13.7	***	11.0	***
CHF	3.3	2.9	*	9.2	***	8.3	***
Has Medicaid Buy-In[b]	4.4	3.0	****	11.2		14.3	***

SOURCES: Medicare EDB (S/HMO II, HPN Risk Plan, and Las Vegas FFS); and enrollment and demographic data from MCBS 1996 and 1997 Cost and Use files.

[a]P-values for age and race categories are from chi-squared statistics for 6 × 2 and 4 × 2 contingency tables, respectively.
[b]Qualifies for Medicaid coverage of Medicare premiums and cost-sharing provisions because of low-income status.
[c]P-values for S/HMO II and Southwest FFS calculated taking into account the complex survey design of MCBS.
[d]Means for Southwest FFS sample calculated with MCBS sample survey weights to reflect US Southwest population.

*Significantly different from zero at the .10 level, chi-squared test.
**Significantly different from zero at the .05 level, chi-squared test.
***Significantly different from zero at the .01 level, chi-squared test.

Compared to the Las Vegas fee-for-service (LV FFS) group, the S/HMO II group has more females and older persons. The LV FFS sample appears to have a higher burden of illness and poverty, with substantially more beneficiaries younger than age 65 (who are presumably eligible for Medicare because of disability), and more low-income beneficiaries (those with Medicaid buy-in).

There is a similar pattern in the S/HMO II and SW FFS comparison. The Southwestern U.S. fee-for-service (SW FFS) group has more beneficiaries younger than age 65 (although not statistically significantly different), and significantly more beneficiaries with Medicaid buy-in.

As shown in Table VI.2, the S/HMO II Group has a lower prevalence of chronic conditions compared to the two FFS groups. These differences are consistent with the well-described tendency of healthier Medicare beneficiaries with fewer chronic conditions to enroll in HMO's (Brown et al. 1993; and U.S. General Accounting Office 1997). On the other hand, some of these apparent contrasts may be due to differences in recording of services and coding of diagnoses in HPN encounter data and Medicare claims data. Since HPM administrative data is the source of encounter data and diagnostic codes for S/HMO II and HPN risk plans, are likely to be based on similar data comparisons between these two groups.

Reassuringly, the prevalence of chronic conditions in Table VI.2 is roughly comparable to published figures, despite some differences in data and definitions in this analysis compared from those previous studies. For example, using survey and Medicare claims data, others have reported a prevalence of diabetes among Medicare beneficiaries ranging from 12 to 14 percent (Culler et al. 1998; Asch et al. 2000; Weiner et al. 1995), of congestive heart failure (CHF) from 5 to 13 percent (Asch et al 2000; and National Institutes of Health 1999), and chronic obstructive pulmonary disease (COPD) from 5 to 14 percent (Asch et al. 2000; and Benson and Marano 1995).

2. Routine General Preventive Care

The following annual preventive services were analyzed: physician visits, influenza vaccinations, and screening mammograms (Table VI.3). There is ample, strong evidence from clinical studies that, among older adults, annual vaccination against influenza and periodic screening mammography can prevent morbidity and mortality among older adults (U.S. Preventive Services Task Force 1996; Gross et al. 1995; and Kerlikowske et al. 1995).[17] Expert consensus is that an annual physician visit is a useful preventive intervention (Asch et al. 2000; and U.S. Preventive Services Task Force 1996). Rates of all three services are accepted measures of the quality of care (National Committee for Quality Assurance 1997; Jencks et al. 2000; and Asch et al. 2000).

[17]The recent controversy over the effectiveness of mammography post-dates the time period of this analysis, as well as the accepted recommendations guiding clinical practice at that time.

TABLE VI.3
COMPARISON OF ROUTINE GENERAL PREVENTIVE CARE FOR ENROLLEES OF S/HMO II, HPN MEDICARE RISK PLAN, LAS VEGAS MEDICARE FEE-FOR-SERVICE (LV FFS), AND SOUTHWEST MEDICARE FEE-FOR-SERVICE (SW FFS)

	S/HMO II	HPN RISK			LV FFS			SW FFS[d]		
	Percent (N)	Percent (N)	P-value[c]		Percent (N)	P-value[c]		Percent (N)	P-value[e]	
Routine General Preventive Care										
Physician Visit Within the Past Year[a] (Encounter/Claims Data)	89.3 (17,169)	88.2 (5,153)	.03	**	80.5 (18,275)	.00	*** ***	83.6 (5.7)	.00	***
Mammography Within the Past Year[b] (Encounter/Claims Data)	43.8 (2,391)	45.7 (750)	.35		31.5 (2,284)	.00		38.2 (59)	.22	
Mammography Within the Past Two Years[c] (Survey Data)	60.8 (4,199)	60.4 (1,369)	.76		--	--		--	--	
Influenza Vaccination Within the Past Year[a] (Survey Data)	60.9 (7,488)	56.4 (2,411)	.00	***	--	--		--	--	

[a]All patients with at least one year of follow-up were eligible for these outcomes.

[b]Women between the ages of 52 and 69 with one year of follow-up were eligible for these outcomes.

[c]Women between the ages of 52 and 69 with two years of follow-up were eligible for these outcomes.

[d]Percentages for SW FFS weighted to reflect US Southwest population.

[e]The p-values are from chi-squared tests of whether the rates of visits in the comparison groups (HPN RISK, LV FFS, and SW FFS) are different from that in the S/HMO II group. P-values for SW FFS calculated taking into account the complex survey design of MCBS.

*Significantly different from zero at the .10 level, chi-squared test
**Significantly different from zero at the .05 level, chi-squared test.
***Significantly different from zero at the .01 level, chi-squared test.

Physician Visits: It was not possible to evaluate the performance of the S/HMO II on this measure relative with the performance of several sets of comparison groups – the HPN risk plan, a sample of Medicare FFS enrollees, a sample of Medicare enrollees in Southwestern States, and three samples of local, regional, and national Medicare HMO's. Table VI.3 indicates that a slightly higher proportion of S/HMO II enrollees had a physician visit than did enrollees in the HPN risk plan (89.3 percent vs. 88.2 percent). Rates for both HPN groups were significantly higher than rates for both FFS comparison groups.

On the other hand, the HEDIS data from the CMS Health Plan Compare web site (Table VI.4) did not show any clear difference between the S/HMO II and two Medicare health plans in the Las Vegas area similarly, based on HEDIS data, the S/HMO II and Medicare health plans in the State of Nevada did not differ in percents of enrollees with at least one physician visit.

TABLE VI.4
PERFORMANCE ON ROUTINE GENERAL PREVENTIVE CARE FOR S/HMO II, HPN RISK PLAN, OTHER NEVADA MEDICARE RISK PLANS, AND NEVADA FFS: 1999 HEDIS DATA FROM CMS'S MEDICARE HEALTHPLAN COMPARE WEB SITE

	S/HMO II	HPN RISK	PacifiCare	Hometown Health Plan	Managed Care Plan Rate for Nevada	Nevada Medicare FFS
Physician Visit Within the Past Year	90.0	86.0	89.0	91.0	89.0	84.0
Mammography Within the Past Two Years	63.0	51.0	68.0	65.0	64.0	54.0
Influenza Vaccine Within the Past Year	64.0	64.0	65.0	69.0	—[a]	65.0

SOURCE: 1999 HEDIS data submitted by health plans to CMS. Data obtained by going to [www.medicare.gov/mphCompare/home.asp] and searching for all plans in the state of Nevada (accessed August 16, 2001).

[a]Data not provided on Web site.

Mammography: Using mammography within the past year as the standard, the S/HMO II differed significantly from only one of the three comparison groups shown in Table VI.3; 43.8 percent of S/HMO II female enrollees met the standard compared to 31.5 percent for the LV FFS sample. Using HFA responses to compare the percentage of beneficiaries in S/HMO II and HPM risk plans who received a mammogram within the past two years, indicated virtually identical rates for the two groups. However, HEDIS data from the Medicare Health Plan Compare website (Table VI.4) indicates that - using a two year standard - S/HMO II enrollees had a higher rate of mammograms than enrollees in the HPN risk plan but not than enrollees in other risk plans.

Influenza Vaccinations: Based on self-reports from the HFA, enrollees in the S/HMO II were more likely to receive an influenza vaccination than counterparts in the HPN risk plans (60.9 percent versus 56.4 percent, p.<.001). However, HEDIS data did not show any difference between the vaccination rate of the S/HMO II and that of any other Medicare HMO comparison group, including the HPN risk plan.

3. Care for Chronic Conditions

Care for chronic conditions was compared in the S/HMO II,– the HPN risk plan, the Las Vegas FFS sample, and the Southwest FFS sample (Table VI.5). Encounter data from the S/HMO II and HPN risk plan and claims data for the two FFS samples were used in this analysis. The comparisons focus on accepted indicators for the care of three chronic conditions: diabetes, chronic obstructive pulmonary disease (COPD), and Congestive Heart Failure (CHF).

TABLE VI.5
COMPARISON OF CARE FOR CHRONIC CONDITIONS FOR ENROLLEES OF S/HMO II, HPN MEDICARE RISK PLAN, LAS VEGAS MEDICARE FEE-FOR-SERVICE (LV FFS), AND SOUTHWEST MEDICARE FEE-FOR SERVICE (SW FFS)

	S/HMO II	HPN RISK		LV FFS		SW FFS[c]	
	Percent (N)	Percent (N)	P-value[b]	Percent (N)	P-value[b]	Percent (N)	P-value[b]
Routine Physician Visits[a]							
Diabetes							
At least one visit within 6 months	93.4 (1,778)	91.3 (518)	.11	92.7 (2,056)	.39	92.3 (57)	.80
At least one visit within each 6-month period, over 12 months	85.1 (1,685)	82.0 (483)	.10 *	83.2 (2,022)	.12	91.3 (56)	.14
At least one visit within each 6-month period, over 18 months	85.3 (1,467)	83.1 (409)	.27	85.5 (1,798)	.88	81.5 (26)	.44
Chronic Obstructive Pulmonary Disease (COPD)							
At least one visit within VI.4)6 months	92.0 (1,106)	88.5 (288)	.06 *	92.7 (2,533)	.49	90.8 (65)	.75
At least one visit within each 6-month period, over 12 months	82.8 (1,023)	76.5 (272)	.02 **	84.1 (2,458)	.35	86.9 (58)	.44
At least one visit within each 6-month period, over 18 months	82.9 (847)	76.3 (224)	.02 **	86.6 (2,138)	.01 ***	85.1 (26)	.71
Congestive Heart Failure (CHF)							
At least one visit within 6 months	94.7 (512)	89.8 (137)	.03 **	93.2 (1,704)	.22	98.5 (49)	.01 **
At least one visit within each 6-month period, over 12 months	85.9 (447)	76.9 (130)	.01 **	86.9 (1,554)	.57	94.4 (43)	.01 **
At least one visit within each 6-month period, over 18 months	88.8 (347)	80.2 (106)	.02 **	88.6 (1,330)	.92	93.9 (24)	.28
Follow-Up Visits After Hospitalizations[d]							
Visit within four weeks of hospital discharge for diabetes	54.1 (423)	57.5 (113)	.55	63.9 (36)	.27	100.0 (2)	.00 **
Visit within four weeks of hospital discharge for CHF	53.4 (601)	56.1 (287)	.99	75.3 (668)	.00 ****	100.0 (8)	.00 **
Visit within two weeks of hospital discharge for depression	25.0 (16)	33.3 (3)	.76	40.4 (52)	.26	--[e]	--

TABLE VI.5 (Continued)
COMPARISON OF CARE FOR CHRONIC CONDITIONS FOR ENROLLEES OF S/HMO II, HPN MEDICARE RISK PLAN, LAS VEGAS MEDICARE FEE-FOR-SERVICE (LV FFS), AND SOUTHWEST MEDICARE FEE-FOR SERVICE (SW FFS)

[a] Only patients with the indicated chronic illness were eligible for these outcomes. There were varying numbers of patients with the required lengths of follow-up (6 months, 12 months, and 18 months).

[b]The p-values are from chi-squared tests of whether the rates of visits in the two comparison groups (HPN RISK and LV FFS) are different from that in the S/HMO II group. P-values for SW FFS calculated taking into account the complex survey design of MCBS.

[c]Percentages for SW FFS weighted to reflect US Southwest population.

[d]Patients with at least the minimum number of weeks of followup were eligible for these outcomes. The hospitalizations for diabetes were restricted to patients with previously diagnosed diabetes, whereas hospitalizations for CHF and depression were in all patients.

[e]There were no hospital discharges for depression in the MCBS SWFFS sample.

*Significantly different from zero at the .10 level, chi-squared test
**Significantly different from zero at the .05 level, chi-squared test.
***Significantly different from zero at the .01 level, chi-squared test.

Routine Physician Visits: For each disease group, the percentage of patients who had a physician visit every 6 months is used as a measure of quality of care. This indicator is based on expert consensus and has been used by other researchers to measure quality of care for Medicare beneficiaries (Asch et al. 2000; and Garnick et al. 1994). Three variations on this outcome were examined, depending on the amount of follow-up time available. For patients for whom we had only 6 months of follow-up, the rates of at least one regular physician visit over the 6-month period were compared. Similarly, for patients with 12 months of follow-up, rates of at least one physician visit *in each* of the two 6-month periods were analyzed. Likewise, for patients with 18 months of follow-up, rates of at least one physician follow-up in each of the three 6-month periods were the evaluation criteria.

The rates of periodic physician visits by enrollees with chronic obstructive pulmonary disease (COPD) and congestive heart failure (CHF) are significantly higher in the S/HMO II than in HPN risk plan over all time frames, from 6 months to 18 months. The percentage of enrollees with COPD with a visit within the past six months was 3.5 percentage points higher in the S/HMO II group than in the HPN risk plan group. For visits over 18 months, the difference is even larger at nearly seven percentage points. Similar results are seen in the comparisons involving people with CHF, with differences between the two groups of 5 percentage points for visits in the 6-month frame, and 9 percentage points for visits over 18 months.

On the other hand, physician visit rates for S/HMO II enrollees with COPD and CHF are lower than in both LV FFS and SW FFS, with some differences reaching statistical significance (Table VI.5). The rate of visits over 18 months by persons with COPD in S/HMO II is significantly lower than in LV FFS by roughly four percentage points (four percent of the LV FFS mean). Visits by persons with CHF over 6 months are also significantly lower in S/HMO II than in SW FFS (roughly 9 percentage points, 9 percent of the SW FFS mean), and lower over 12 months as well (5 percentage points, 5 percent of the SW FFS mean).

There were, however, no appreciable differences between the S/HMO II and any of the comparison groups for rates of physician visits by persons with diabetes.

Post-hospitalization Follow-up: Expert consensus has been that Medicare beneficiaries discharged from the hospital for diabetes or CHF should have a physician office visit within four weeks, and that those discharged for depression should have a mental health office visit within two weeks (National Committee for Quality Assurance 1997; Asch et al. 2000; and Powe et al. 1996). Hospital discharges with the appropriate ICD-9 diagnosis codes were selected and matched with claims files to identify occurrences of at least one office visit within the appropriate time frame.

The S/HMO II's performance appears no different than HPN risk plan's, but somewhat worse than LV FFS. Of the three comparisons, however, only the one involving CHF is statistically significant. Sample sizes for the SW FFS group were too small to permit reliable inferences from any of the comparisons with the S/HMO II even though two of the differences were statistically significant.

HEDIS Measures for Diabetes and Heart Disease: The Medicare Health Plan Compare HEDIS data included a number of chronic care measures: members with diabetes who received hemoglobin A1c testing, an eye exam, or blood lipid testing in the appropriate time periods, and members with a heart attack who were prescribed beta-blocker medications (Table VI.6). The S/HMO II performs somewhat better than the HPN risk plan with much higher rates for two of the three indicators of quality diabetes care (testing for hemoglobin A1c and testing for blood lipids). However, the rate of the third indicator for diabetes care (eye examinations) was lower, and the rate of beta-blocker prescription after heart attack was about the same. Compared to other Medicare HMO's, however, the S/HMO II looks about the same, or perhaps slightly worse. The S/HMO II rates of hemoglobin A1c and lipid testing are comparable to the other groups, but the rate of eye exams is substantially lower. The S/HMO IIs rate of beta-blocker prescription after heart attack is better than for Hometown Health Plan, but similar to PacifiCare and the statewide Medicare managed care rate for Nevada.

TABLE VI.6
PERFORMANCE ON CHRONIC ILLNESS CARE FOR S/HMO II, HPN RISK, OTHER NEVADA MEDICARE RISK PLANS, AND NEVADA FFS: 1999 HEDIS DATA FROM CMS'S MEDICARE HEALTH PLAN COMPARE WEB SITE

	S/HMO II	HPN RISK	PacifiCare	Hometown Health Plan	Medicare Managed Care Plan Rate for Nevada
Percentage of Patients with Diabetes Receiving Recommended:					
Blood Tests for Hemoglobin A1c	76.0	64.0	77.0	82.0	76.0
Eye Examinations	29.0	43.0	67.0	42.0	46.0
Blood Tests for Lipid Levels	73.0	58.0	77.0	77.0	74.0
Percentage of Patients Prescribed Beta-Blocker Medication After Heart Attack	86.0	90.0	86.0	71.0	85.0

SOURCE: 1999 HEDIS submitted by health plans to CMS. Data obtained by going to [www.medicare.gov/mphCompare/home.asp] and searching for all plans in the state of Nevada (accessed August 16, 2001).

NOTE: Data for Nevada Medicare FFS beneficiaries not provided on Web site.

4. Potentially Avoidable Hospital Conditions (PAHCs)

PAHCs are acute hospitalizations for conditions that experts consider generally avoidable with timely and effective outpatient care. Thus, they are frequently used as indicators of both access to care and quality of care received (Massachusetts Rate Setting Commission 1995; Fleming 1995; Kozak et al. 2001; and Asch et al. 2000). Focusing on PAHCs most common among elderly people. The ICD-9 diagnosis codes used to identify PAHCs were similar to those used by other researchers. Only the first occurrence of a PAHC for each patient was counted.

Tables VI.7 through VI.9 present the estimates of the effects of S/HMO II on the risk of hospitalization relative to three groups, the HPN risk plan, the Las Vegas FFS sample, and the Southwest FFS sample. Risk is presented in two ways – as the probability of "surviving" (not being hospitalized) for a specified period of time (180 days), and as the ratio of the risk for S/HMO II enrollees relative to enrollees in other plans, the "hazard ratio". The S/HMO group is the reference group with a hazard of one. A hazard ratio of greater than one implies that the comparison group has a higher risk of experiencing an "event" relative to the S/HMO group, while a hazard ratio of less than one implies the opposite.

Compared to the HPN risk plan (Table VI.7), there is a slightly higher risk (borderline statistical significance) for a pneumonia admission among S/HMO II enrollees. However, there is also a significantly lower risk of hospitalization for respiratory complications among S/HMO II enrollees with COPD. The remaining comparisons have statistically insignificant adjusted hazard ratios ranging from 0.9 to 1.0.

TABLE VI.7
COMPARISON OF POTENTIALLY AVOIDABLE HOSPITALIZATIONS BETWEEN S/HMO II AND HPN RISK PLAN

	Estimated Rate of Event (no. per 1,000) at Roughly 180 Days[c]		Adjusted Hazard Ratio[c]			
	S/HMO II	RISK	S/HMO II (Reference)	RISK	P-value[a]	
Avoidable Hospitalizations for: [b]						
Cellulitis	0.6	0.6	1.0	1.00	0.93	
Pneumonia	3.7	3.0	1.0	0.80	0.08	*
Kidney/Urinary Tract Infections	1.1	1.4	1.0	1.30	0.23	
Congestive Heart Failure	6.5	7.2	1.0	1.10	0.24	
Any of the Above	11.5	11.8	1.0	1.03	0.74	
Diabetes in Patients with Diabetes[d]	0.5	0.2	1.0	0.44	0.44	
Respiratory Complications in Patients with COPD[e]	38.1	57.9	1.0	1.50	0.01	

SOURCE: HPN Encounter Data.

[a]The p-values are those of the coefficients on the SHMO II/Risk Plan indicator variables in Cox proportional hazards regressions of time until the first event.

[b]All patients were eligible for the first four outcomes of cellulitis, pneumonia, kidney/urinary tract infections, and CHF (N= 27,246).

[c]These figures are derived from probabilities estimated from the Cox proportional hazards regressions. Probabilities are calculated only at the times of actual events, so the probabilities for each outcome are actually for the event time closest to 180 days. The actual event times are as follows: cellulitis, 172 days; pneumonia, 179 days; kidney/urinary tract infections, 179 days; congestive heart failure, 180 days; any of the above, 180 days; diabetes in patients with diabetes, 160 days; and, respiratory complications in patients with COPD, 180 days. The probabilities have been adjusted for differences between the two groups on the following variables: gender, age, race, and low-income (actual entitlement to state Medicaid "buy-in" for coverage of Medicare premiums and cost-sharing).

[d]Only patients with diabetes were eligible for this outcome (N= 2,715). There were only nine events.

[e]Only patients with COPD were eligible for this outcome (N= 1,753).

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

Compared to the Las Vegas FFS group, enrollees in the S/HMO II group appear to have uniformly lower risks of PAHCs (Table VI.8), with all but two of the adjusted hazard ratios reaching statistical significance. These hazard ratios must be viewed with caution, however, as the handful of control variables available are severely limited in ability to adjust for baseline differences in health status. As previously noted, there is a tendency for healthier beneficiaries, with lower expected future health services use, to enroll in Medicare managed care plans. Moreover, the available data suggests lower burdens of illness and comorbidity among S/HMO II enrollees compared to LV FFS enrollees (See Table VI.2). The apparent lower risks for potentially avoidable hospitalizations among S/HMO II enrollees, thus could reflect only unmeasured baseline differences between S/HMO II and LV FFS enrollees and not necessarily a S/HMO II effect *per se*.

The results of the comparison of PAHCs in S/HMO II and the Southwest FFS sample are mixed (Table VI.9) and show no clear-cut influence of the S/HMO II. Two of the adjusted hazard ratios significantly favor S/HMO II (kidney/urinary tract infections and diabetes in enrollees with diabetes),[18] while two favor the Southwest FFS sample (pneumonia and congestive heart failure). The remaining hazard ratios, while not statistically significant, exhibit a similar mixed pattern.

Taken together, the findings presented in the three tables do not provide strong evidence for either a positive or negative effect of S/HMO II on quality of care.

[18]The enormous adjusted hazard ratio of 300 for diabetes in enrollees in diabetes is likely unreliable and the result of a relatively small sample of persons with diabetes and a small number of hospitalizations of diabetes patients.

TABLE VI.8
COMPARISON OF POTENTIALLY AVOIDABLE HOSPITALIZATIONS BETWEEN S/HMO II AND LAS VEGAS FEE-FOR-SERVICE (LV FFS)

	Estimated Rate of Event (no. per 1,000) at Roughly 180 Days[c]		Adjusted Hazard Ratio[c]			
	S/HMO II	LV FFS	S/HMO II (Reference)	LV FFS	P-value[a]	
Avoidable Hospitalizations for: [b]						
Cellulitis	0.6	1.6	1.0	2.8	.00	***
Pneumonia	3.7	6.1	1.0	1.7	.00	***
Kidney/Urinary Tract Infections	1.1	1.4	1.0	1.7	.00	***
Congestive Heart Failure	6.5	9.2	1.0	1.1	.24	
Any of the Above	11.5	17.7	1.0	1.5	.00 0	***
Diabetes[d]	0.5	1.0	1.0	2.0	.09	*
Respiratory Complications in Patients with COPD[e]	38.1	33.6	1.0	0.88	.25	

SOURCE: HPN Encounter Data and Medicare Claims Data.

[a]The p-values are those of the coefficients on the SHMO II/LV FFS indicator variables in Cox proportional hazards regressions of time until the first event.

[b]All patients were eligible for the first four outcomes of cellulitis, pneumonia, kidney/urinary tract infections, and CHF (N= 41,706).

[c]These figures are derived from probabilities estimated from the Cox proportional hazards regressions. Probabilities are calculated only at the times of actual events, so the probabilities for each outcome are actually for the event time closest to 180 days. The actual event times are as follows: cellulitis, 177 days; pneumonia, 180 days; kidney/urinary tract infections, 179 days; congestive heart failure, 180 days; any of the above, 180 days; diabetes in patients with diabetes, 180 days; and respiratory complications in patients with COPD, 180 days.

[d]Only patients with a history of diabetes were eligible for this outcome (N= 4,432).

[e]Only patients with COPD were eligible for this outcome (N= 4,245).

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE VI.9
COMPARISON OF POTENTIALLY AVOIDABLE HOSPITALIZATIONS BETWEEN S/HMO II AND SOUTHWEST FEE-FOR-SERVICE (SW FFS)

	Adjusted Hazard Ratio			
	S/HMO II (Reference)	SW FFS	P-value[a]	
Avoidable Hospitalizations for: [b]				
Cellulitis	1.0	3.50	.15	
Pneumonia	1.0	0.43	.06	*
Kidney/Urinary Tract Infections	1.0	2.50	.00	***
Congestive Heart Failure	1.0	0.44	.02	**
Any of the Above	1.0	0.73	.30	
Diabetes[c]	1.0	300.00	.05	**
Respiratory Complications in Patients with COPD[d]	1.0	0.39	.25	

SOURCE: HPN Encounter Data and 1996 and 1997 MCBS Cost and Use Data.

NOTE: The software used to compute estimates for this table, SUDAAN, does not calculate estimated survival probabilities. SW FFS sample weighted using MCBS weights.

[a]The p-values are those of the coefficients on the SHMO II/SW FFS indicator variables in Cox proportional hazards regressions of time until the first event. P-values calculated taking into account the complex survey design of the MCBS.

[b]All patients were eligible for the first four outcomes of cellulitis, pneumonia, kidney/urinary tract infections, and CHF (N= 21,403).

[c]Only patients with a history of diabetes were eligible for this outcome (N= 2,149).

[d]Only patients with COPD were eligible for this outcome (N= 1,448).

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

C. CONCLUSIONS

Overall, the many comparisons of the S/HMO II to several groups, using multiple data sources, do not provide compelling evidence that S/HMO II has had large-scale or broad-based impacts on any of the quality of care outcomes measured. In light of the ambitious efforts of SHMO IIs to re-engineer a managed care organization to improve geriatric care (Newcomer et al. 2000), these our findings are somewhat disappointing.

Among the measures of routine general preventive care, the S/HMO II did have higher rates of annual physician visits and mammography than Las Vegas and Southwest FFS samples, but then so did the HPN risk plan. The S/HMO II rates of annual physician visits, mammography, and influenza vaccination do not appear substantially different than rates for other Nevada Medicare plans or for Nevada Medicare managed care plans overall.

Among the chronic care measures, rates of physician visits for S/HMO II enrollees with the chronic conditions of COPD and CHF compare favorably to the HPN risk plan, but tend to be worse than the rates in both the Las Vegas and Southwest FFS samples. Rates of follow-up visits after hospital discharge in S/HMO II also appear lower than in the Las Vegas FFS sample. In the Medicare Health Plan Compare HEDIS data on chronic care indicators, the performance of the S/HMO II plan is similar to or possibly worse than that of the two other Nevada Medicare plans and Nevada Medicare managed care overall.

The evidence of S/HMO II effects on preventable hospitalizations is also unclear. There appears to be little effect of S/HMO II on PAHCs compared to the HPN risk plan. Compared to LV FFS, however, S/HMO II enrollees appear to have significantly lower risks for PAHCs. These results may well be biased, though, because of important unmeasured differences in case mix between the two groups. Furthermore, the comparison of S/HMO II to SW FFS yields an inconsistent mix of results. S/HMO II enrollment reduced the risk of hospitalization for some conditions, yet increased the risk for others.

Using multiple pieces of evidence, S/HMO II does not appear to have led to substantial or extensive impacts (either positive or negative) on the quality of care. This conclusion is consistent with the health and functioning analysis of the preceding chapter, which found no significant impacts of the S/HMO II on enrollees' health and functional status.

VII. SUMMARY AND CONCLUSION

No clear or convincing evidence was found that outcomes for S/HMO II enrollees overall were better or worse than they would have been had they not enrolled in the S/HMO II. Though several hundred comparisons of the health and functioning of S/HMO II members with that of risk-plan members were undertaken, over three quarters of these comparisons showed no statistically significant differences between the two. Nor were S/HMO II members who reported needing help with Activities of Daily Living or Instrumental Activities of Daily Living more likely to receive help than similarly impaired risk plan members.

S/HMO II enrollees in the comparatively healthy community sample were more likely to use most Medicare-covered services than members of the HPN risk plan. Of eight statistically significant differences in the probability of service use, seven indicated greater use by S/HMO II members. Surprisingly, this was not the case with the smaller samples of medically frail enrollees. Although enrollees in the 22-month follow-up groups were *less* likely to be hospitalized, the difference was small – 21 percent of S/HMO II members were hospitalized during the follow-up period, compared to 22.5 percent of risk-plan members. Moreover, enrollees with less than 22 months of follow-up were *more* likely to be hospitalized – 56.6 percent, compared to 52.5 percent for members of the risk plan.

Finally, no compelling evidence was found that S/HMO II enrollees received care of a consistently higher quality than they would have received in other settings. Most quality of care outcomes for the S/HMO II enrollees, including measures of preventive care and of potentially avoidable hospital conditions, were similar to outcomes for members of other risk plans. Physician visits for S/HMO II enrollees with COPD and CHF, and follow-up physician visits after hospital discharge compared favorably with doctor visits for members of the risk plan; however, these physician visits tended to be fewer than for local beneficiaries under Medicare fee-for-service.

Despite the lack of striking overall differences, however, some limited evidence of positive S/HMO II effects was found primarily in a small group of the most medically frail enrollees. For example, enrollees in the group who had been hospitalized more than once in the period before S/HMO II enrollment and for whom there was 22 months of follow-up were significantly less likely to be hospitalized than members of the HPN risk plan. In general, however, the positive results were scattered and, in some instances were accompanied by other less favorable outcomes for S/HMO II members. S/HMO II members in high-risk groups, for example, were generally less likely than risk-plan members to report that their health had improved.

Given the S/HMO IIs explicit incorporation of systematic assessment, care coordination, and the provision of expanded services (Newcomer 2001) in S/HMO II, it may be surprising that better outcomes were not observed. These findings, however, echo those of an earlier evaluation of four S/HMO I plans (Newcomer et al. 1995a). Numerous other community-based interventions have reported similarly disappointing results (Kemper et

al. 1988; Weissert and Hendrick 1994; Dalby et al. 2000). It is unclear why this evaluation did not produce clear evidence that the S/HMO II model of care produced improved outcomes. However, some of the following limitations of the evaluation, and of the design and implementation of the demonstration, should be considered in assessing the findings of this report.

Evaluation design. For reasons outside the control of the evaluators, participants were followed for a maximum of only 22 months. Whether this can be viewed as enough time for S/HMO II effects to be observed is difficult to judge. Program advocates often argue that evaluations fail to allow enough time for program effects to emerge fully. This area is largely unexplored. Evaluation of the S/HMO II could not in any event, have continued beyond April, 1999, because the comparison group was, at HPNs request, allowed to enroll in the S/HMO II.

Demonstration Design and Implementation. The S/HMO II program design was not constant over the period of the evaluation. Many components of the S/HMO II remained in flux through 1997 and 1998. Newcomer et al. (2001) reported that the S/HMO II geriatric team was not fully in place until early 1998, hospital discharge planning was not integrated with the S/HMO II care coordination process until Summer 1998, and assessments by the HPN home health agency were not coordinated with S/HMO II assessments until January 1999. They also found sharp increases of 100 to 400 percent in the number of day care visits, respite visits, and home help visits per 1000 enrollees between 1998 and 1999 and again between 1999 and 2000. Therefore, it is important to emphasize that the evaluation studied the S/HMO II *as it existed* between June 1997 and April 1999.

Finally, there are some indications that the S/HMO II model was more effective with frail, medically at-risk enrollees. However, the small number of very frail individuals enrolled in the S/HMO II made it difficult to detect relatively short-term effects on nursing home use or other key outcomes. One of the strengths of the S/HMO II model is the ability to integrate acute and long-term care. Yet relatively few individuals enrolled in the S/HMO II were at high risk of needing nursing home care over the 22-month follow-up period. Only one percent of the comparison group entered a nursing home for custodial care and less than one percent was impaired in eating (the most severe level of impairment in the Activities of Daily Living). Thus, the problem could be that the program goals and target population should have been more sharply defined and the services more explicitly directed to achieve those goals for the frail populations. PACE and the Wisconsin Partnership Program are examples of programs that serve more narrowly targeted populations of medically vulnerable enrollees. An evaluation of PACE (Chatterji et al., 1998) found the program reduced utilization of hospital and skilled nursing care while producing significant, positive impacts on health and functional status. An evaluation of the Wisconsin Partnership Program should be completed in 2003.

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