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Evaluation of the Community Nursing Organization Demonstration Interim Evaluation Report

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EXECUTIVE SUMMARY

In January 1994, the Office of Research and Demonstrations of the Health Care Financing Administration began operation of the Community Nursing Organization Demonstration. The demonstration, mandated by the Omnibus Budget Reconciliation Act of 1987, is designed to ascertain whether provision of a specified set of Medicare-covered services, financed through a capitation arrangement and administered via a system of nurse case management, could produce unproved health outcomes and satisfaction for Medicare beneficiaries in a cost-effective manner. Community Nursing Organizations, or CNOs, were established in four sites: Tucson AZ. Urbana IL, Minneapolis MN, and Queens NY. The CNOs provide to their members all Medicare-covered home health care, durable medical equipment, prosthetics, orthotics, supplies, and ambulance services. They assume full financial risk for these services. The Medicare program remits a monthly capitation pavment for each CNO member; the payment vanes by the member's age, sex, number of home health visits in the previous six months. and (in three of the sites) functional status, as measured by the Activities of Daily Living (ADL) scale. In addition, the CNO receives a case management fee of $22 (originally $20) per member per month. Individuals currently enrolled in Medicare Part A and B, who were not currently receiving services under the Medicare hospice or End Stage Renal Disease (ESRD) benefits and were not enrolled in a Medicare risk HMO were eligible to apply for enrollment in the CNO.

The demonstration was implemented as a social experiment. Applicants were informed during the introductory information session that there was a one-thud probability that they would not be allowed to enroll in the CNO but would instead be assigned to a control group. Members of the control group received care in whatever way they would have had there been no demonstration. All beneficiaries who wished to apply to a CNO after being informed of the requirements of participation and the of the process of randomization were interviewed prior to randomization. The interview elicited information about the applicant's background, health and functional status, behaviors, recent use of health care, and overall satisfaction with care. The interview was repeated by telephone 15 months after the tune of randomization.

By October 1995, more than 5,400 beneficiaries were enrolled in the four CNOs. This Interim Report describes results from the first 15 months of operation of the demonstration. To date, CNO applicants have been found to be healthier and more independent, on average, than the general Medicare population in their respective market areas.

Analysis of measures of health, physical functioning and satisfaction with care for some 2,040 individuals in the treatment group and 964 in the control group for whom 15 months had elapsed since the time of randomization detected no statistically significant differences. Analysis of a subsample of individuals who were

1.0 THE CNO DEMONSTRATION

For good or ill, many elements of the Medicare program continue to function as they have throughout its existence, very much like the components of a typical indemnity health insurance plan. Therapeutic and restorative care ordered by a physician and supplied by particular types of providers under well-specified conditions is reimbursed under Parts A and B of Medicare. Preventive care, health promotion, and care not authorized by a physician with few exceptions are not. The first significant alteration in this pattern was brought about by the Tax Equity and Fiscal Responsibility Act (TEFRA), which in 1985 permitted HMOs to take responsibility for all Medicare-covered services in return for a fixed monthly payment for each subscriber. Medicarecertified HMOs can, and often do provide a richer and more flexible array of services to their members than are available under fee-for-service Medicare. Medicare beneficiaries are often reluctant to join HMOs. however, because HMOs typically restrict members' choice of provider.

The Community Nursing Organization (CNO) demonstration, created by the Omnibus Budget Reconciliation Act of 1987, is an alternative to the traditional HMO. A Community Nursing Organization (CNO) receives a monthly capitation fee from Medicare for each member and in return accepts full financial risk for providing Medicare-covered home health, durable medical equipment, ambulance service and supplies. Like HMOs, CNOs can exercise substantial discretion in organizing care in the most efficient and productive way. Unlike HMOs, they are not responsible for *all* Medicare-covered services. CNO enrollees receive care from physicians, hospitals and other facilities in the same manner as all other Medicare beneficiaries.

To carry out the CNO demonstration, the Health Care Financing Administration in 1993 entered into cooperative agreements with four eligible organizations to serve as demonstration providers:

- Carondolet Health Care, Tucson AZ
- Carle Clinic, Urbana IL
- Living at Home/Block Nurse Program, Minneapolis MN
- Visiting Nurse Service, New York NY'

Key interventions under the demonstration are 1) the assumption of full risk for the provision of CNO services, as mandated under OBRA, and 2) nurse case management, including in-person assessments of all members at six-month intervals. Sites were paid an additional $20 per member per month at the inception of the demonstration to perform this service.'

[1] For convenience, we shall refer to sites by their state (AZ, IL. MN. NY) in this report. The reader should bear in mind that the CNO service areas are in all cases much smaller, typically comprising only a few counties.

[2] This amount was increased to $21 on January 1 1995 and to $22 on January 1 1996

1.1 The CNO Demonstration: Eligibility, Services and Payment

Etigibility and Enrollment

All Medicare beneficiaries residing in defined catchment areas, who are entitled to benefits under Part A and who are enrolled in Part B of Medicare are eligible to enroll in the CNO, with the following exceptions:

- beneficiaries enrolled in Medicare risk HMOs,
- beneficiaries receiving care under the Medicare hospice benefit, and
- beneficiaries entitled to Medicare under the End Stage Renal Disease (ESRD) benefit.

Each CNO site was required to hold at least one open enrollment period during the operational phase of the demonstration and to accept any eligible beneficiary who applied for membership. Those accepted into the demonstration were randomly assigned to treatment and control groups for the evaluation.

CNO members may disenroll at the end of a calendar month for any reason. No enrollee may be forced to leave the CNO due to high service use. However, under certain conditions a CNO may be required to disenroll a member. These are:

- failure to maintain enrollment in Parts A and B of Medicare,
- institutionalization for 60 or more consecutive days,
- enrollment in a Medicare risk HMO,
- use of the Medicare hospice benefit,
- residence outside of the CNO service are for more than 30 consecutive days,
- persistent use of out-of-plan care for CNO mandatory services while enrolled in the CNO, or
- refusal of mandatory six-month assessment.

Sites began enrolling members on January 1 1994 and may continue to enroll new members until June 30 1996. The demonstration is scheduled to conclude on December 3 1 1996.

Covered Services

OBRA 1987 required that certain services be provided as part of the CNO service package. These services were further clarified by contracts between HCFA and the four CNO sites to include:

- Part-time or intermittent nursing care furnished by or under the supervision of registered professional nurses.
- Physical, occupational, or speech therapy.
- Social and related services supportive of a plan of ambulatory care.
- Part-time or intermittent services of a home health aide.
- Medical supplies (other than drugs and other biologicals) and durable medical equipment while under a plan of care.

- Rural health clinic services described in section 186 1 (aa)(l)(C) of the Act.
- Ambulance services as defined in 42 CFR 4 10.40
- Certain other related services listed in section 19 15(c)(4)(B) of the Act. As already noted, case management must be provided.

Capitation and Case Mix Adjustment

Each of the four CNOs receives a monthly payment for each enrolled member. Payments are based on the local average annual per capita cost for Medicare-covered services that are part of the CNO's package. These rates in turn are adjusted for case mix as directed by OBRA In all sites, payments are adjusted for age, sex. and number of Medicare-covered home health visits in the previous six months. In three of the sites (AZ, MN, and NY) payments are further adjusted for the number of limitations in activities of daily living (ADLs) experienced by the enrollee. This results in a total of 39 payment cells for those sites. Payments to the Carle Clinic (IL) site are not adjusted for ADL limitations and are based on 13 payment cells. Following each 6-month reassessment, enrollees are assigned to the payment cell appropriate for their age, home health utilization, and (in three sites) number of ADL limitations.

1.2 CNO Operations

Recruitment and Intake

Each site developed its own strategy for marketing and recruitment of eligible beneficiaries. All sites relied on physician referrals, direct mail, and word of mouth. Some sites also used brochures, fliers, group presentations, television and newspaper advertising, and telemarketing efforts. Because the demonstration was conducted as an experiment, with random assignment to treatment or control groups, it was important that beneficiaries who expressed interest in the program understand that there was a ⅓ probability that they would be assigned to a control group and not be enrolled in the CNO. Sites were therefore required to secure informed consent from each applicant. The consent document informed the applicant that the CNO was a temporary demonstration project, that he or she must agree to receive all care in the CNO service package only from the CNO, that he or she would be enrolled in the CNO only if assigned to the treatment group, and that he or she would be contacted by Abt Associates for telephone interviews at one-year intervals.

After securing informed consent from the applicant, a CNO staff person conducted a baseline interview with the applicant. The interview elicited information on health, mental status, functional limitations, health risk, demographic characteristics, attitudes toward health providers and satisfaction with care. Applicants were randomized after the interview. (The randomization procedure is described in Chapter 2.) Applicants assigned

to the control group were thanked for their participation and informed that they could not receive services from the CNO. Applicants assigned to the treatment group were further assessed, if necessary, to facilitate care planning and case management and were enrolled in the CNO.

Case Management

Aside from the requirement that every CNO member be evaluated in person at six-month intervals, each of the CNO sites is free to define and configure the process of case management in the way it judges to be most beneficial to the member and efficient for the organization. Methods of assessment, resources devoted to planning and monitoring, as well as the number of members whose care is actively managed therefore differ from site to site. Although the benefits and cost effectiveness of case management for the frail or chronically ill are fairly well established (Cohen 1991), the value of case management in the broader population of the "generally well elderly" remains unknown. Because the demonstration has only four sites and because the case management intervention is not experimentally varied across sites or individuals, the evaluation will be unable to distinguish the distinct effects of capitation and case management on beneficiary outcomes, utilization, or cost.

1.3 The CNO Evaluation

The CNO demonstration was implemented as a social experiment. All CNO applicants were randomized into treatment and control groups. Two applicants were assigned to the treatment group for every one assigned to the control group. The experimental design provides for a clearer path to inference than does the prospective observational study, which relies on comparisons of individuals who choose to enroll with those who do not. Under the observational design, distinguishing the effects of the CNO from the effects of unobservable characteristics and traits of individuals who join, relative to those who do not, can be a nearly impossible undertaking. All methods for making the distinction between treatment (CNO) and so-called "selection" effects necessarily rely on ancillary assumptions whose validity cannot be evaluated directly (Burtless 1995).

For all its benefits, randomization does not guarantee accurate or even unbiased estimates. The most serious difficulty is that individuals randomized to the treatment group may fail, for a number of reasons, to enroll in the CNO. They may enroll, but drop out of the CNO after a short time. These individuals cannot be eliminated from the analysis without reintroducing the problem that randomization was designed to fix — selection bias.[3] In strictest terms, the evaluation measures the effect of assignment to the treatment group. If nearly all individuals

[3] Removing these individuals from the analysis would introduce no problems if those individuals who would have either failed to enroll or dropped out could be removed also from the control group. Since these latter individuals are unknown, this strategy is clearly impossible.

so assigned actually enroll and remain in the CNO, then assignment to the treatment group is essentially identical to receipt of the CNO "treatment." Although methods to correct for a higher dropout rate have been developed (e.g. Imbens and Angrist 1994), they generally exhibit low statistical power. In consequence, a substantial rate of nonenrollment or disenrollment remains a clear threat to the evaluation

1.4 The CNO Intervention and Individual Outcomes

Experiments with care delivered under a capitation arrangement that involve delegation of decision-making and authority can usually be understood to aim at familiar goals — either enhancing health and well-being without increasing cost, or at mild increases in cost, or else a reduction in cost with no measurable sacrifice in health, functioning, or satisfaction. In order for the CNO to have any effect on enrollee outcomes, it must impinge on the lives of those enrollees in some way that is different from what would have occurred in its absence. This leads us naturally to ask what scope of action is available to the CNOs to effect improvements in cost and outcomes.

The CNO demonstration alters the provision of ambulatory care to the treatment group in two ways. First, the CNOs assume full financial risk for all care in the CNO service package, in return for a monthly capitation payment for each enrollee. Second, the CNOs provide nurse case management to all enrollees, including in-person assessments for all members at six-month intervals. These alterations give rise to three mechanisms by which CNOs can alter directly the manner in which resources are used to maintain and improve the health and functioning of enrollees.

- The CNO is accorded much greater discretion in the provision of Medicare-covered services, Hence the individual needs of an enrollee can be accorded greater importance than under fee-for-service Medicare, which requires determination of eligibility and medical necessity.
- The CNO can employ the most appropriate forms of care, and can choose to provide services not traditionally covered by Medicare, such as prevention and health promotion, if these are judged to be more effective for the enrolled population.
- Frequent screening (via the six-month reassessment) may identify **some** conditions at an earlier point than in its absence.

Because the literature is a poor guide to the effects of these mechanisms on health outcomes, few clear hypotheses emerge. CNO services are financed through capitation payments, an arrangement which removes the link between service provision and payment and also affords the CNOs the increased discretion in matching services to enrollee needs. Purely financial incentives motivate CNOs to provide fewer services than they would if they were paid separately for each service. In the only study to date comparing Medicare home health care under HMO and fee-

for-service (FFS) arrangements, Schlenker, Shaughnessy and Hittle (1995) found evidence that providers responded to these incentives. Among Medicare beneficiaries who received some home health care, those who were enrolled in Medicare risk HMOs received fewer home health visits on average than beneficiaries who remained under fee-for-service Medicare, even after adjustment for casemix, location, and demographic characteristics. In a separate article, Shaughnessy, Schlenker and Hittle (1994) found that these same beneficiaries experienced somewhat better outcomes under fee-for-service, leading them to speculate that "most HMO patients are underserved in terms of the number of home health visits."

It should be noted that the service package and payment structure faced by the CNOs could produce stronger financial incentives to restrict services than those faced by the HMOs studied by Shaughnessy, Schlenker and Hittle. Most acute care services covered by Medicare (in particular hospital and physician services) are ***outside*** the CNO service package. Hence at least some portion of any financial consequences of a reduction in services (relative to FFS) will not be borne by the CNO as they would by a Medicare risk HMO. Consider for example a CNO and a Medicare risk HMO each contemplating the provision of home care costing $200 to a member. Suppose that both providers believe that this care will reduce the probability that the member is hospitalized in the current month by 0.1. Both providers will incur a cost of $200 by providing the care. The expected financial benefit from providing the care is 0.1 times the cost of the hospitalization for the HMO. The expected financial benefit for the CNO is zero. This argument does not imply that the CNO would fail to provide the care in question — ***only*** that the *financial* incentives to provide the care are weaker for the CNO than for the HMO.

Although capitation does reduce the incentive to provide services, it also permits greater flexibility for provision of services that the CNO case manager considers most appropriate, even if the services are not covered by Medicare. These may include homemaker services, preventive care, health promotion classes (e.g. smoking cessation cholesterol and weight control, exercise classes, etc.) or telephone consultations. Therefore while we may hypothesize that the number of Medicare-covered home health visits per month or the proportion of individuals receiving durable medical equipment (DME) will be lower among CNO enrollees than among the control group, this does not imply that enrollees necessarily receive fewer total services or that these services are of lesser value or effectiveness than those received by the control group.

The extent to which efforts to provide health promotion and prevention services to CNO enrollees actually produce improved outcomes depends both on their effectiveness in changing behavior and on the relationship between health and behavior. Existing evidence is mixed at best. A number of highly visible trials aimed at lowering the prevalence of behavioral risk factors for cardiovascular and pulmonary disease have produced disappointing results (Leupker et al. 1994; The COMMIT Group 1995). Moreover, the benefits of improved health behaviors among the elderly have not been clearly established. There is now a reasonable

consensus that prevention activities have little effect on mortality from cardiovascular disease and perhaps on mortality from all causes (Fries, Greene and Levine 1989: McCormick and Skrabaneck 1988). A number of studies, however, have observed reduced morbidity associated with smoking cessation and with adoption of regular exercise (MRFIT Research Group 1986; Posner et al. 1990). At the same time, other studies (e.g. Branch and Jette 1985) have found no association between lifestyle habits and adverse health outcomes among the elderly. Kennie (1993) notes that in comparison to younger adults, "Evidence that such apparently 'unhealthy lifestyles' really impact on the health of elderly people is much less apparent."[4] This is not to say that community-based efforts to promote use of preventive care and the adoption of beneficial personal habits are suspect. Even simple health promotion efforts have been shown to increase the use of mammography (King et al. 1994: Lantz et al. 1995), a procedure of demonstrated preventive value among women aged 50 and over (American College of Physicians i 99 1; Tabar et al. 1985). It is nevertheless important to recognize that the effective scope of health promotion and preventive care is not unlimited and that the bounds on its effectiveness are in many cases unknown.

A further difficulty is posed by the three-year duration of the demonstration. Health promotion. preventive care, and periodic health assessments are interventions that tend to bear fruit in the long run. For example, two years are required for the elimination of one-third of the excess risk of coronary heart disease among middle-aged women who stop smoking (Kawachi et al. 1994). Whatever the benefits to the elderly of improved diet, increased exercise, or of say, increased compliance with a prescribed schedule for blood pressure medication, they do not necessarily occur in the first few months, or perhaps even the first few years after a change in behavior. There can be no assurance then, that all effects of health promotion and prevention activities will be captured by the evaluation,

Whether nurse case management can be expected to markedly improve the health of CNO members or the cost-effectiveness of their care is similarly difficult to predict. The received literature provides little guidance on the issue. The benefits claimed for case management are typically rooted in the assertion that health services to a substantial portion of the elderly are heavily fragmented. But evidence that such fragmentation seriously compromises care has been difficult to fine because of the paucity of studies directly comparing case-managed and non-case managed elderly populations. Despite studies comparing alternative approaches to case management (Eggert et al. 1991) or evaluating the internal efficiency of resource use by case managers (Davidson, Muscovice,

[4] To avoid mischaracterizing Kennie's views, we note that at another point he states, "Older adults who quit smoking show improved lung function and a reduction in respiratory symptoms. There is also a reduction in associated pneumonia and influenza death rates."

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2.0 DESIGN AND ANALYSIS

The CNO demonstration is structured such that the impacts of the CNO intervention can be readily measured. In this chapter, we discuss the aspects of the demonstration design that support the evaluation, the data that will be used, and the analytic approach.

Implementation of any novel approach to health care delivery is a dynamic process, where theoretical design concepts must sometimes be altered to accommodate real-world constraints, and the CNO demonstration is no exception. HCFA, the sites, and the evaluation contractor have collaborated in an effort to balance implementation concerns with evaluability. The compromises that have sometimes been necessary, and their implications for the evaluation, are also discussed in this chapter.

2.1 Experimental Design

In order to develop the most precise possible estimates of the impacts of the CNO intervention, the demonstration is structured as a classic experimental design where the experiences and outcomes of participants (the treatment group) are compared to those of a cohort that is alike in **all** ways except their exposure to the intervention (a control group). Given that participation in the CNO is voluntary, and the decision to enroll is likely to be influenced by hard-to-measure factors that also influence outcomes, the only way to create a valid control group is to do so *after* the decision to participate has been made. In the CNO, all volunteers are randomly assigned to treatment or control status after enrollment and collection of baseline data. To accommodate the programs' need to build up enrollment quickly, the random assignment is performed using a ratio of 2: 1, where 2 volunteers are assigned to the treatment group for every volunteer assigned to the control group. This effective reduction in the size of the control group increases the minimum size of the impact that can be detected reliably. In agreeing to a ratio for the random assignment, the sites had to balance the size of the impact that could be detected (and would therefore represent the threshold for being considered to have *had* an impact, based on the quantitative evaluation) against the need to take on higher recruitment quotas. For example, it was estimated that an assignment ratio of 2: 1 meant that an 8 percent reduction in the rate of inpatient admissions could be detected with statistical power of .71 (at a .10 significance level), assuming total enrollment of 4,800 (3,200 in the treatment group and 1,600 in the control group). Allocating to treatment and control groups using a 1: 1 ratio would allow a smaller impact to be detected with comparable power, but would require the sites to be satisfied with 2,400 treatment participants or to recruit a larger total number of applicants (6,400 in this example) to yield the same number of enrollees (3,200).

- identification numbers (Medicare HICN)
- biographical information (date of birth, sex, race, state, county, zip code)
- date of death
- Medicare Part A and/or Part B entitlement and termination dates
- End Stage Renal Disease (ESRD) entitlement
- disability entitlement

There is one important piece of biographical information that is not contained in the HISKEW file: the beneficiary's name. While Abt does not need to know the beneficiary's name for analytic purposes, it served as a valuable cross-check for the identification numbers reported by the CNO during the eligibility determination process. Beneficiary names were obtained from HCFA's Enrollment Database (EDB) tile.

While the HISKEW file indicates that a beneficiary is currently or has been a participant in a Medicare HMO, it does not denote the current beneficiary HMC status, a key component of eligibility for the CNO demonstration. Thus, HCFA's Group Health Plan Master File (GHPMASTER) was used to identify the periods during which an individual was enrolled in a Medicare HMO. The GHPMASTER supplied the following types of information about each beneficiary:

- identification numbers (beneficiary, social security, claim)
- Medicare HMO service dates

Similarly, the HCFA Hospice Enrollment File was used to identify the periods during which an individual was in a Medicare hospice.

2.2.3 CNO Site Data

The CNO sites agreed to collect two types of service data to document the volume and types of service they provide to CNO enrollees. These are:

- Primary nurse provider (PNP) time sheets -to document the volume and type of direct and indirect services provided to enrollees by PNPs; and
- Service utilization data-intended to document other (non-PNP) services provided to enrollees by the CNO.

The CNO Staff Tune Sheet, while capturing data on the primary nurse provided (PNP) time spent on CNO activities, is focused on associating these data with individual enrollees so they can be used in the impact analysis. PNP time is: recorded on an enrollee basis so that each chunk of time will be broken into a series of beneficiary/service "bills". The basic service is the time that:

a single PNP spent providing

Eligible Comparison Group

The Eligible Comparison Group was drawn from the universe of Medicare beneficiaries who resided in the CNO's market areas and appeared to be eligible for the CNO, had they chosen to apply. To select the 12,000 beneficiaries for this sample, April 1, 1994 was selected as an 'anchor' date (to be comparable to the CNO random assignment date and county of residence as of 4/1/94) was determined for each CNO treatment and control participant with a randomization through June 30, 1995. Counties with the greatest frequency of CNO enrollment were considered for inclusion in the final sample. Using the Health Insurance Skeleton Write-off (HISKEW) for 1994, all beneficiaries who lived in any of those counties as of 4/1/94 were selected. From the resulting universe, only those who, as of 4/1/94:

- were alive;
- were eligible for both Medicare Part A and B;
- were not ESRD;
- were not in a risk HMO;
- did not have an inpatient stay overlapping that period; and
- did not have a SNF stay overlapping that period

were retained. Subsequently, a small number of beneficiaries with at least one claim with Place of Service in a nursing home in April 1994 were removed from the Eligible Comparison Group, because we assume that they were not CNO-eligible at the time of their anchor date (4/1/94). The final Eligible Comparison Group contains 11,635 beneficiaries.

Table 2.1 shows the distribution of these samples across the CNO sites.

Table 2.1

Distribution of Analysis Sample by Site*

	Carle	Carondelet	LAH/BNP	VNSNY	Total
CNO Treatment Group	2,082	2,297	1.734	1,314	7,427
CNO Control Group	997	1,163	854	648	3,662
Eligible Comparison Group (ECG)	2,883	2,939	2,912	2,901	11,635

Source: CNO Random Assignment System and HCFA Enrollment Database
*Counts exclude errors during randomization.

2.3.1 Analytic File Construction

For the Treatment and Control Groups, baseline and followup assessment data are available. For at least 20% (and from some sites 100%) baseline data on Omaha problems are available. And for CNO enrollees (treatment group), timesheet and utilization data from the sites, as well as CNO enrollment records maintained by HCFA, are available. Using all of these data, a variety of analysis files were constructed

Table 2.2

Summary of Data Sources by Sample

	HCFA			Site Data				Abt Data
	Utilization	CNO Enrollments	EDB	Baseline Assessment	Baseline Omaha	PNP Timesheet	Service Utilization	Followup Assessment
Treatment	✓	✓*	✓	✓	✓**	✓	✓	✓
Control	✓		✓	✓	✓**			✓
Eligible Comparison Group	✓		✓					

*HCFA Enrollment data were available through April 30, 1995 only.
**Available for at least 20% of treatment and control group members from all sites.

Utilization Measures

Utilization measures were developed from the sites' timesheet and service utilization data and the HCFA utilization files. Two cost and utilization files were created; one for CNO participants, and one for the Eligible Comparison Group. All files are at the person level and contain data aggregated into 42 person-months.

All cost and utilization data were summed into person-specific calendar month variables based on the FROM date of service, and no apportionment was done. That is, if a claim or inpatient stay began in March 1995 and continued into April 1995, all the cost and utilization for that claim/stay were assigned to March 1995, while none were assigned to April 1995.

Missing Values

There are several reasons why some data might be set to missing on the analysis files. First, without a correct Medicare Health Insurance Claim (HIC) number for a beneficiary, Medicare claims and enrollment data could not be obtained, and all analytic variables derived from Medicare data would be set to missing. In a few cases, Retirement Board (RRB) numbers were not converted to the standard SSA format, and Part A data were

not obtained, although EDB and Part B data were. All Part A utilization variables for these beneficiaries have been set to missing. Also, if a beneficiq's 18-month followup period extended beyond the latest point for which Medicare data were available, the latter months would be set to missing.

3.0 CNO OPERATIONS: A COMPARISON OF ENROLLMENT ACROSS THE CNO SITES

3.1 Enrollment

The four CNO sites--Carle Clinic, Carondelet Health Care, Living at Home/Block Nurse Program (LAH/BNP), and Visiting Nurse Service of New York (VNSNY) began enrollment in January 1994 and by the end o f 1994 each of the CNO sites had enrolled more than 1,000 members. The largest site, Carondelet Health Care, had enrolled over 1,800 members by this time. In every site, 80 percent or more of those who were ever enrolled remained in the CNO through June 199.5. Table 3.1 provides an overview of the enrollment and disenrollment patterns of the sites for the period January 1994 through June 1995. Enrollment and disenrollment data were compiled from the enrollment data base maintained at HCFA.

Table 3.1

Enrollment Experience by Site January 1994 through June 1995

	Carle	Carondelet	LAH/BNP	VNSNY
Ever Enrolled[1]	1,907	2,191	1,655	1,149
Disenrolled[2]	184	379	87	89
(% of ever enrolled)	(10%)	(17%)	(5%)	(8%)
Reenrolled[3]	34	30	17	3
(% of disenrolled)	(19%)	(8%)	(20%)	(3%)
Enrolled (as of June 30, 1995)	1,757	1,842[4]	1,585	1,063

Source: Health Care Financing Administration.

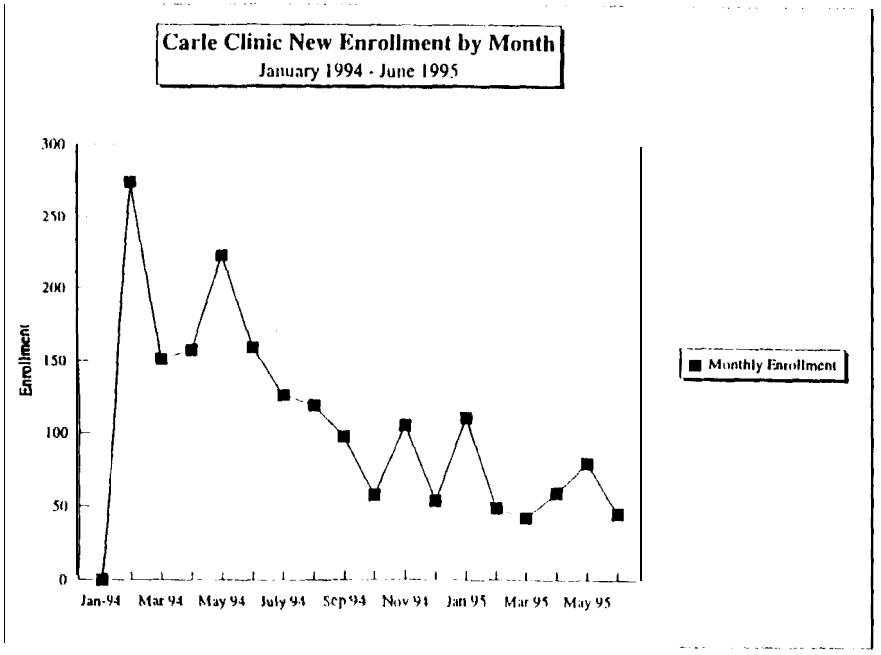
Figure 3.1 presents new monthly enrollments by site for the period January 1994 through June 1995. Carle Clinic enrolled a large number of members early in the demonstration. The monthly enrollment rate declined after April 1994 and never returned to the levels experienced in the first four months of the demonstration. By contrast, the other three sites each enrolled fewer members in the early months of the demon-

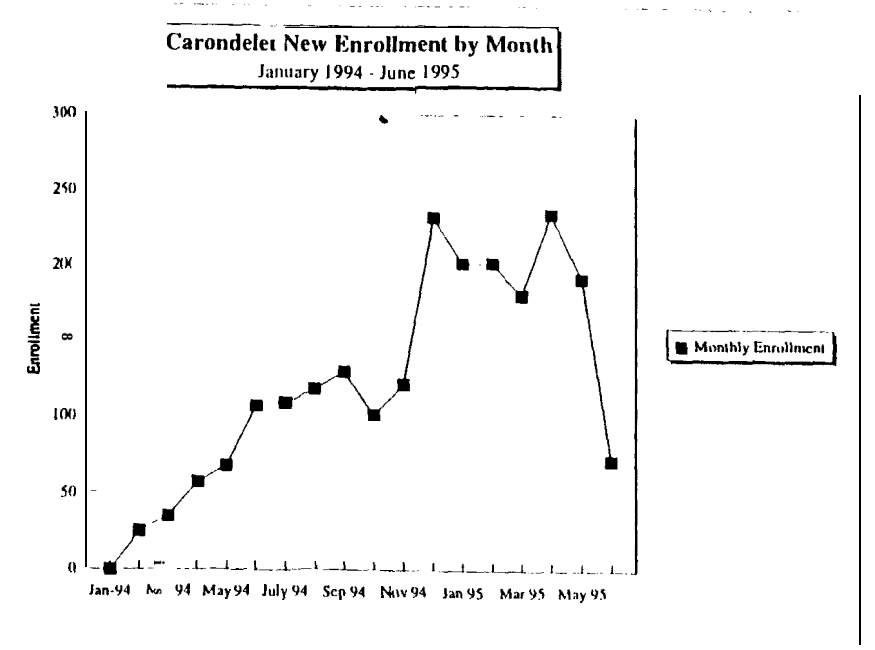
[1] Clients are considered ever enrolled if they Joined the CNO and the CNO site received payment for that enrollee anytime between 1/1/94 and 6/30/95.

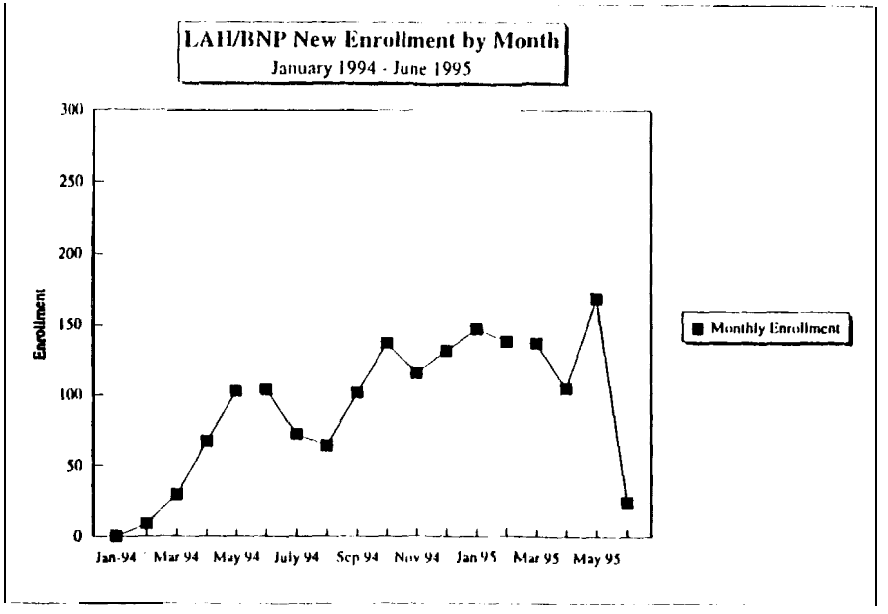
[2] Clients are considered disenrolled at least once between 1/1/94 and 6/30/95

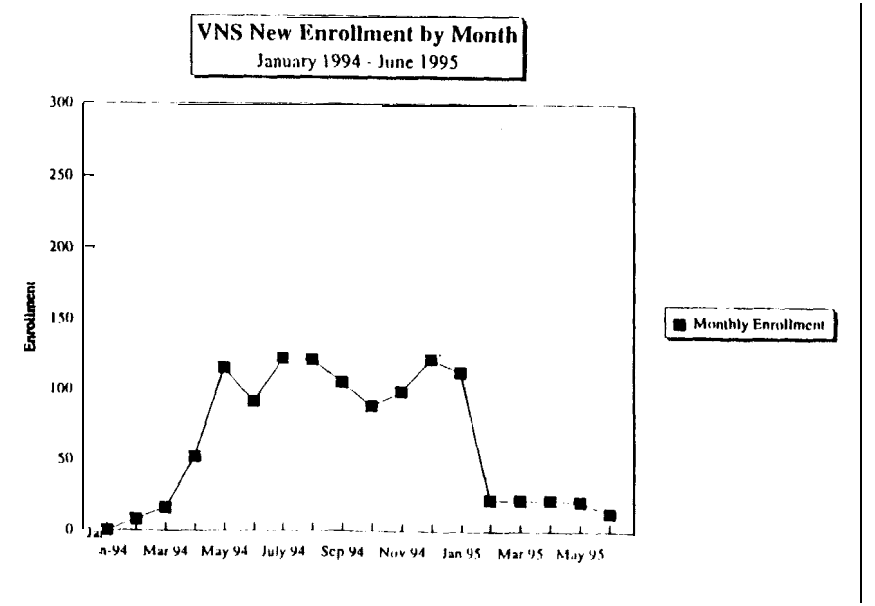
[3] Clients are considered re-enrolled if they first disenrolied and then re-enrolled any time between 1/1/94 and 6/30/95.

[4] Figures do not sum to the total ever enrolled because five persons disenrolled a second time after reenrolling


Carle Clinic New Enrollment by Month
January 1994 - June 1995
Enrollment
300
250
200
150
100
50
0
Jan-94
Mar 94
May 94
July 94
Sep 94
Nov 94
Jan 95
Mar 95
May 95
Monthly Enrollment


Carondelet New Enrollment by Month
January 1994 - June 1995
Enrollment
300
250
200
150
100
50
0
Jan-94
May 94
July 94
Sep 94
Nov 94
Jan 95
Mar 95
May 95
Monthly Enrollment


LAH/BNP New Enrollment by Month
January 1994 - June 1995
Enrollment
300
250
200
150
100
50
0
Jan-94
Mar 94
May 94
July 94
Sep 94
Nov 94
Jan 95
Mar 95
May 95
Monthly Enrollment


VNS New Enrollment by Month
January 1994 - June 1995
Enrollment
300
250
200
150
100
50
0
Mar 94
May 94
July 94
Sep 94
Nov 94
Jan 95
Mar 95
May 95
Monthly Enrollment

stration. For two of the sites, Carondelet and LAH/BNP, new enrollments did not peak until the spring of 1995, almost halfway through the demonstration.

As noted in the 1994 Annual Report (Teitelbaum & DeVito, 1995) both Carondelet and LAH/BNP had to overcome several marketing challenges, including facing stiff competition from local HMOs and needing to appeal to a wide range of client populations. Both sites also experienced turnover of a key staff positions which affected the implementation process and made marketing more difficult. VNSNY also had problems implementing the CNO and did not make final decisions about site selection and staffing until several months into the demonstration. In contrast, Carle Clinic had prior experience with demonstrations and was familiar with the client population, some of whom already used Carle services.

Enrollments are cumulated in Figure 3.2 to provide a clearer picture of the relative size of the sites for the period January 1994 through June 1995. From the fall of 1994 through the winter of 1995, Carondelet entered a period of rapid enrollment, recruiting 1053 new members between October 1994 and February 1995. Site staff ascribed this increase to a change in Carondelet's recruitment practices and the initiation of a telemarketing effort. During the second half of 1994, LAH/BNP and VNSNY also grew rapidly so that by December 1994, all of the sites had memberships over 1000.

CNO members are permitted to disenroll for any reason at the end of each calendar month. Members who remain in a hospital or nursing home for more than 60 days, who enter a Medicare risk HMO, or who leave the CNO service area for more than 30 days ***must*** be disenrolled from the program. Sites are required to complete a reassessment of each enrollee every six months. From January 1994 through January 1995, the reassessment "window" extended from 15 days before to 15 days after each 6 month anniversary of enrollment. In February 1995, this period was extended to 28 days in order to give the sites more flexibility in scheduling reassessments. Enrollees who are not reassessed within the time frame specified by HCFA are automatically disenrolled.

Table 3.2 shows the principal reasons for disenrollment, as reported by the sites to HCFA. The most common reason (34 percent) for disenrollment was relocation outside the CNO service area. Disenrollments at Carondelet far exceeded those at any other site; indeed they exceeded disenrollments at all other sites combined. Almost half of Carondelet's disenrollments were a result of relocation (46 percent). According to site staff, it is reasonable to suppose that a substantial portion of Carondelet's enrollees were temporary winter visitors ("snow birds") who returned to other residences during Arizona's spring and summer months. Carondelet has expended considerable effort in recruiting disenrollees to rejoin the CNO once they return to Tucson. Reports from the sites' staff indicate that subsequent to June 1995 this effort and those of the other sites to boost reenrollments have met with considerable success.

Figure 3.2

Cumulative Enrollment for All Sites

January 1994 - June 1995

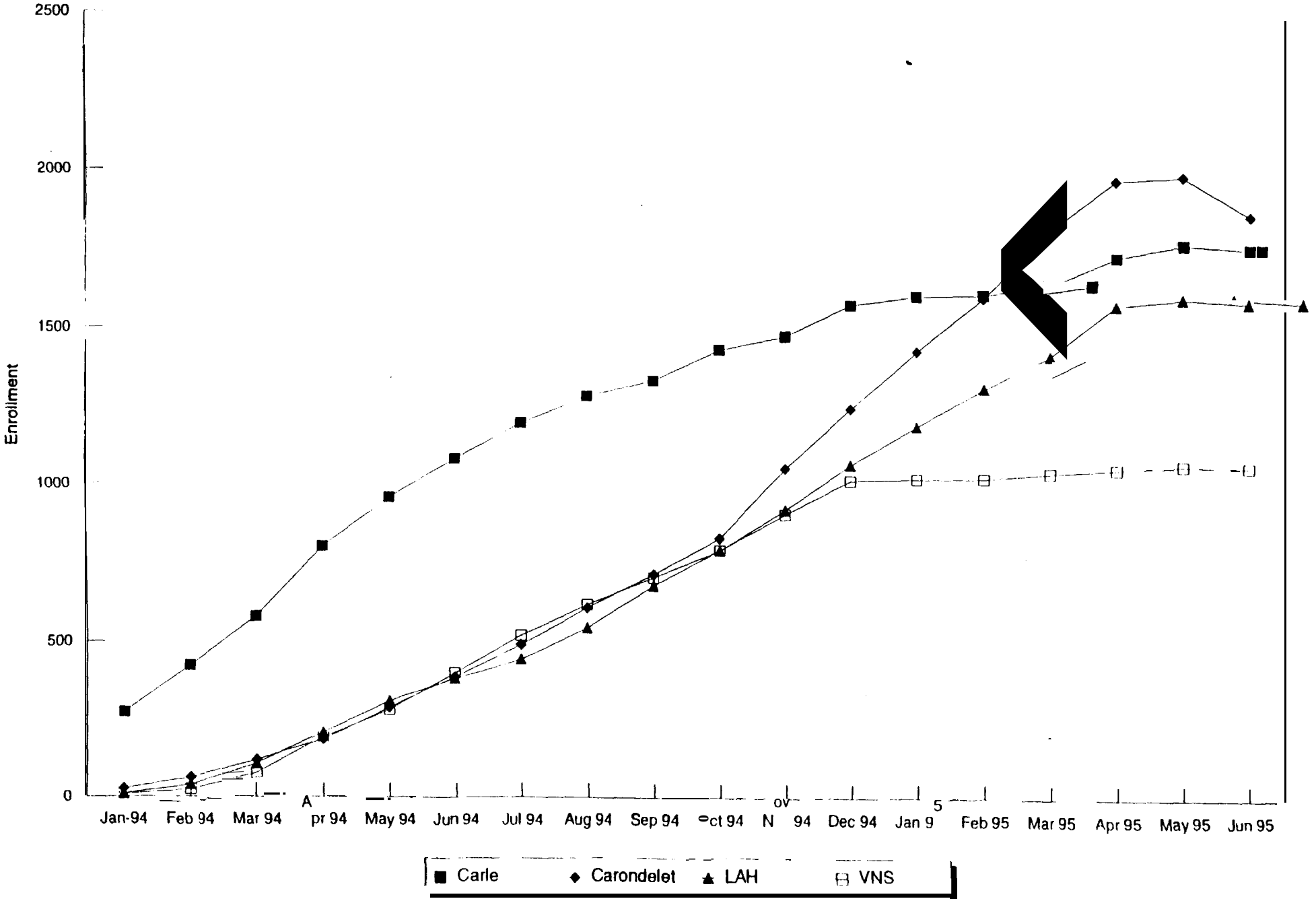


Table 3.2

Reasons for Disenrollment - January 1994 - June 1995

	Carle		Carondelet		LAH/BNP		VNSNY		Total	
	Number	% of Site Disenrollees	Number	% of Site Disenrollees	Number	% of Site Disenrollees	Number	% of Site Disenrollees	Number	% of All Disenrollees
Relocation	62	34%	173	46%	8	9%	4	4%	247	34%
Voluntary Withdrawal	66	36%	49	13%	1	1%	9	10%	125	17%
Death	25	14%	31	8%	24	28%	28	31%	108	15%
tnstitution	23	13%	16	4%	19	22%	9	10%	67	9%
HMO Enrollment	0	0%	41	11%	3	3%	15	17%	59	8%
Late Date Reassessment	2	1%	8	2%	2	2%	24	27%	36	5%
Other	6	3%	56	15%	30	34%	0	0%	92	13%
TOTAL	184	25%	374	51%	87	12%	89	12%	734	100%

Source: Health Care Financing Administration

Note 1: Totals may not sum to 100% due to rounding and to the presence of missing or invalid responses

Note 2: Enrolles who disenrolled and then reenrolled (1 percent of total enrollees) are not included in these figures.

Carle had the highest number of voluntary disenrollments. An earlier report (Teitelbaum and DeVito, 1995) attributed some of this disenrollment at Carle to dissatisfaction some enrollees felt over the lack of prevention and health promotion programs and the sense that they were not benefiting from their participation in the CNO. Carle addressed this problem in several ways. They initiated a newsletter and began to offer health promotion programs as a way of involving enrollees more fully in the program. Perhaps, as a result of these changes, Carle's rate of disenrollment dropped from a high of 38 in January 1995 to a low of 2 in June 1995.

It is noteworthy that LAH/BNP experienced a very low rate of voluntary withdrawal. The forthcoming 1995 Annual Report will explore the reasons behind this low rate. We are interested to know whether the rate reflects enrollees' satisfaction with the services provided by the CNO or whether the LAH/BNP staff have implemented particular strategies to reduce the rate of voluntary disenrollrnents.

The Carondelet site lost a greater fraction of total enrollees to HMOs than any other site. This result is consistent with reports from site staff who have emphasized the difficulty of recruiting and retaining members in an environment of intense competition from local Medicare HMOs. At the Carle site, however, not a single enrollee left the CNO to join an HMO. Since the Carle CNO is itself affiliated with the largest Medicare HMO in the area, a plan which does not hold a Medicare risk contract, it is quite likely that the individuals who applied to this CNO had little opportunity to join a risk HMO.

One percent of all disenrollments were due to late 6 month reassessments. Initially some of the sites had difficulty completing reassessments within the established window in a timely manner due to staffing shortages. However, reports received from the sites since June 1995 indicate that these problems have been resolved.

Table 3.3 presents enrollee distribution by site by rate cell categories[5] at 6, 12, 15, and 18 months. The vast majority of enrollees across all sites would appear to have few functional limitations. During the first 18 months of the demonstration, all of the sites except VNSNY averaged over 90 percent of their membership in the A10 - Al 9 rate cell, that is, they had received fewer than 5 home health visits in the previous six months and had no more than one limitation in activities of daily living (ADL). The tendency for VNSNY enrollees to be frailer and in poorer health than those at the other sites was noted in a previous report (Teitelbanm and DeVito, 1994) and is supported by the data in Table 3.3. Approximately 15 percent of VNSNY enrollees are in B, C, or D rate cells. In contrast, during the same period, approximately 3 percent of Carle's enrollees, 8 percent of Carondelet's, and 5 percent of LAH/BNP's were in B, C, or D rate cells.

'Refer to Chapter 1 for an explanation of rate cell categories

Table 3.3

Enrollee Distribution by Rate Cell by Site
January 1994 - June 1995

	June 94		Dec 94		Mar 95		June 95	
Carle[6]	Number	% of Total Enrollments	Number	% of Total Enrollments	Number	% of Total Enrollments	Number	% of Total Enrollments
A	1038	96%	1520	97%	1590	97%	1704	97%
B	20	2%	23	1%	22	1%	26	1%
C	8	1%	13	1%	11	1%	12	1%
D	14	1%	19	1%	18	1%	17	1%
TOTAL	1080		157.5		1641		1759	

	June 94		Dec 94		Mar 95		June 95	
Carondelet	Number	% of Total Enrollments	Number	% of Total Enrollments	Number	% of Total Enrollments	Number	% of Total Enrollments
A10-A19	361	93%	1136	91%	1663	92%	1716	92%
A20-A29	3	1%	11	1%	13	1%	14	1%
A30-A39	4	1%	8	1%	13	1%	12	1%
B	5	1%	29	2%	37	2%	37	2%
C	4	1%	25	2%	32	1%	32	1%
D	13	3%	37	3%	56	3%	52	3%
TOTAL	390		1246		1814		1863	

[6]Carle Clinic has only one A rate cell because it uses a different payment method from the other three CNO sites.

Table 3.3 (continued)

LAH/BNP	June 94		Dec 94		Mar 95		June 95	
	Number	% of Total Enrollments	Number	% of Total Enrollments	Number	% of Total Enrollments	Number	% of Total Enrollments
A10-A19	368	95%	1018	95%	1364	95%	1530	95%
A20-A29	4	1%	9	1%	11	1%	12	1%
A30-A39	3	1%	12	1%	15	1%	15	1%
B	2	1%	7	1%	9	1%	9	1%
C	5	1%	14	1%	14	1%	15	1%
D	1	1%	5	1%	5	1%	6	1%
TOTAL	383		1065		1418		1587	

VNSNY	June 94		Dec 94		Mar 95		June 95	
	Number	% of Total Enrollments	Number	% of Total Enrollments	Number	% of Total Enrollments	Number	% of Total Enrollments
A10-A19	348	87%	871	86%	897	86%	919	87%
A20-A29	18	4%	35	3%	34	3%	33	3%
A30-A39	14	3%	42	4%	38	4%	37	3%
B	4	1%	13	1%	13	1%	12	1%
C	6	1%	15	2%	15	2%	17	2%
D	12	3%	39	4%	43	4%	44	4%
TOTAL	402		1015		1040		1062	

Source: Health Care Financing Administration
Note: Enrollees who disenrolled and then reenrolled (1 percent of total enrollment) are not included in these figures.

A10-A19 - requiring fewer than 5 home health visits, problems with fewer than 2 ADLs.
A20-A29 - requiring fewer than 5 home health visits and problems with 2 ADLs.
A30-A39 - requiring fewer than 5 home health visits and problems with 3 or more ADLs.
B - requiring 6 to 12 home health visits.
c - requiring 12-30 home health visits.
D - requiring 3 1 or more home health visits.

3.2 Comparison of CNO Enrollees with CNO-Eligible Population

In order to examine the process of self selection into the CNO and to assess the representativeness of CNO applicants, the characteristics of enrollees were compared to those of CNO-eligible Medicare beneficiaries residing in the same localities. For the purpose of such a comparison, a random sample of approximately 3,000 was selected from those Medicare beneficiaries in each of the CNO sites who were believed to have been eligible to join the CNO on April 1, 1994. All were enrolled in Medicare Part A and B, were not enrolled in a Medicare Risk HMO and were not receiving Medicare hospice or ESRD services on this date. Tables 3.4 through 3.6 present a comparison of CNO enrollees and this CNO-eligible sample in terms of 3 variables -- age, hospital stays and home health visits prior to the date of enrollment for CNO enrollees and prior to April 1, 1994, the so-called "anchor date" for the eligible comparison group. (See chapter 2.)

Table 3.4

Age Distribution of CNO Enrollees (Enr.) and Eligible Comparison Group (Comp.)

	Carle		Carondelet		LAH/BNP		VNSNY	
	Enr.	Comp.	Enr.	Comp.	Enr.	Comp.	Enr.	Comp
65-69	33%	26%	21%	26%	19%	28%	13%	25%
70-74	30%	27%	30%	29%	25%	25%	21%	26%
75-79	21%	21%	25%	22%	23%	20%	24%	19%
80-84	11%	13%	15%	13%	19%	13%	23%	16%
85+	6%	13%	9%	11%	13%	14%	19%	13%

Source: Health Care Financing Administration
Note: Enrollees who disenrolled and then reenrolled (1 percent of total enrollment) are not included in these figures

Table 3.5

Home Health Visits (HHV) for CNO Enrollees (Enr.) and Eligible Comparison Group (Comp.)

	Carle		Carondelet		LAH/BNP		VNSNY	
	Enr.	Comp.	Enr.	Comp.	Enr.	Comp.	Enr.	Comp.
No HHV	98%	99%	97%	98%	97%	98%	94%	97%
HHV	2%	1%	3 %	2%	3%	2%	6%	3%

Source: Health Care Financing Administration
Note: Enrollees who disenrolled and then reenrolled (1 percent of total enrollment) are not included in these figures.

Although this is not indicated in Table 3-4, the number of Medicare disabled (age less than 65) beneficiaries enrolled in the CNO is much lower than that of the Medicare population in general. With the exception of Carle, CNO enrollees appear to be slightly older than the population eligible to enroll. VNSNY enrollees are the oldest with almost two thirds being 75 years of age or older. There is little overall evidence of favorable selection at least in terms of age. With respect to the other two variables (home health visits, hospital stays), none of the enrollee/comparison group differences was statistically significant again indicating that randomization procedures for selecting the enrollee sample worked.

Table 3.6

Hospital Stays (Hosp.) for CNO Enrollees (Enr.) and Eligible Comparision Group (Comp.)

	Carle		Carondelet		LAH/BNP		VNSNY	
	Enr.	Comp.	Enr.	Comp.	Enr.	Comp.	Enr.	Comp.
No hosp.	88%	86%	83%	86%	86%	85%	84%	87%
Hosp.	12%	14%	17%	14%	14%	14%	16%	13%

Source: Health Care Financing Administration
Note: Enrollees who disenrolled and then reenrolled (1 percent of total enrollment) are not included in these figures

3.3 Sociodemographic Characteristics from the Baseline Assessment Data

Random assignment into the treatment and control groups guarantees that there are no expected sociodemographic differences between the groups. However, the sociodemographic characteristics of the enrollees do differ among the sites, as is indicated by analyses of the baseline assessment data. Tables 3.7 through 3.13 present characteristics of CNO applicants derived from assessment data received through the middle (June 1995) of the second year of operations,

Table 3.7

CNO Applicants - Gender

	Carle		Carondelet		LAH/BNP		VNSNY		TOTAL	
	#	% of Total	#	% of Total	#	% of Total	#	% of Total	#	% of Total
Female	1657	(58%)	2016	(61%)	1632	(66%)	1316	(77%)	662 1	(64%)
Male	1181	(42%)	1317	(39%)	832	(34%)	402	(23%)	3732	(36%)

Source: CNO Baseline Assessment Interviews.
Note 1: Enrollees who disenrolled and then reenrolled (1 percent of total enrollees) are not included in these figures

Note 2: Totals may not sum to 100% due to rounding and to the presence of missing or invalid responses,

Table 3.7 presents gender across sites. As can be expected given national demographic patterns among the senior population, the majority of CNO enrollees are female. With respect to gender, the VNSNY population is the most skewed with females comprising over three-quarters of the membership.

Table 3.8 presents the racial composition of the CNO population. The CNO population is homogenous with respect to race. Across all sites, over 90 percent of all enrollees are white. Although Carondelet and VNSNY are both located in areas with high Hispanic populations, it is not surprising that neither site has large numbers of Hispanic enrollees. Nationally, only 5.4 percent of all Hispanics are aged 65 and over (U.S. Bureau of the Census, 1994). Also, Hispanics comprised 2 and 1 percent of the Arizona and New York samples of CNO-eligible beneficiaries respectively (U.S. Bureau of the Census, 1992). Thus, in actuality, Carondelet and VNSNY both have higher proportions of Hispanic enrollees than are found in the Medicare populations in their respective locations

Table 3.8

CNO Applicants - Race

	Carle		Carondelet		LAH/BNP		VNSNY		TOTAL	
	#	% of Total	#	% of Total	#	% of Total	#	% of Total	#	% of Total
White	2775	(98%)	3141	(94%)	2427	(99%)	1611	(94%)	9954	(96%)
Non-white	62	(2%)	188	(6%)	37	(1%)	101	(6%)	388	(4%)
Hispanic	13	(<1%)	151	(5%)	6	(<1%)	50	(3%)	220	(2%)

Source: CNO Baseline Assessment Interviews.
Note 1: Enrollees who disenrolled and then reenrolled (1 percent of total enrollees) are not included in these figures

Note 2: Totals may not sum to 100% due to rounding and to the presence of missing or invalid responses.
Note 3: White and Hispanic categories may not be mutually exclusive.

Table 3.9 presents the education level of enrollees across the four sites. Over 75 percent of all the enrollees are high school graduates. Roughly half of them received some form of schooling beyond high school. VNSNY has the highest proportion of enrollees (40 percent) who are not high school graduates, In contrast, 57 percent of Carondelet's enrollees have attended at least some college. This high proportion may reflect the higher socioeconomic status of elderly residents of Arizona, many of whom can afford to maintain two residences, wintering in Arizona and spending the rest of the year elsewhere.

Table 3.9

CNO Applicants - Educational Level

	Carle		Carondelet		LAH/BNP		VNSNY		TOTAL	
	#	% of Total	#	% of Total	#	% of Total	#	% of Total	#	% of Total
Some Grammar	269	(9%)	159	(5%)	240	(10%)	327	(19%)	995	(10%)
Some HS	295	(10%)	259	(8%)	430	(17%)	369	(21%)	1353	(13%)
HS Grad	906	(32%)	708	(21%)	762	(3 1%)	512	(30%)	2888	(28%)
Trd/Voc Grad	144	(5%)	319	(10%)	229	(9%)	106	(6%)	798	(8%)
Some College	538	(19%)	830	(25%)	379	(15%)	233	(14%)	1980	**(19%)**
College Grad +	685	(23%)	1054	(32%)	424	(18%)	169	(10%)	**2332**	**(22%)**
TOTAL	2837		3329		2464		1716		**10346**	

Source: CNO Baseline Assessment Interviews
Note 1: Enrollees who disenrolled and then reenrolled (1 percent of total enrollees) are not included in these figures
Note 2: Totals may not sum to 100% due to rounding and the presence of missing or invalid responses.

Table 3-10 presents the marital status and living arrangements of enrollees. The majority of all enrollees (57 percent) are married. Carle has the highest proportion of married enrollees (70 percent) whereas VNSNY has the lowest (32 percent). As can be expected with a population that is older, sicker and predominantly female. VNSNY also has the highest proportion of widowed enrollees (52 percent). Perhaps for this reason, the New York site has the highest proportion of enrollees living alone, far higher than at any other site and double the proportion of Carle enrollees who live alone

Table 3.11

CNO Enrollees - Income Distribution

	Carle		Carondelet		LAH/BNP		VNSNY		TOTAL	
	#	% of Enr.	#	% of Enr.	#	% of Enr.	#	% of Enr.	#	% of Enr.
$10,000 or less	288	(10%)	335	(10%)	449	(18%)	522	(30%)	1594	(15%)
$10,001-$20,000	705	(25%)	826	(25%)	884	(36%)	659	(38%)	3074	(30%)
$20,001-$40,000	1025	(36%)	1210	(36%)	772	(31%)	316	(18%)	3323	(32%)
$40,001- $60,000	373	(13%)	485	(15%)	155	(6%)	56	(3%)	1067	(10%)
$60,000 or more	254	(9%)	212	(6%)	51	(2%)	17	(1%)	534	(5%)

Source: CNO Baseline Assessment Interviews.
Note 1: Enrollees who disenrolled and then reenrolled (1 percent of total enrollees) are not included in these figures
Note 2: Totals may not sum to 100% due to rounding and the presence of missing or invalid responses.

Table 3.12 presents rates of enrollment in Medicaid, Medigap, and other supplemental insurance. The overwhelming majority of enrollees across all sites do not have Medicaid coverage. In Minnesota and Arizona, so-called "section 1115 waivers" make it very difficult for the CNO sites to enroll individuals who are eligible for both Medicaid and Medicare. These waivers make it easier for states to maintain enrollment in Medicaid managed care, since they permit states to set longer "lock-in" periods than are usually allowed in states operating without waivers. Enrollees in managed care programs are not eligible for membership in the CNO.

In New York, the absence of Medicaid enrollees among the CNO population may be due to the stringent income eligibility standards enforced by Medicaid. Although, VNSNY enrollees are comparatively poorer than CNO enrollees at other sites, they are, according to VNSNY staff, nevertheless in most cases ineligible for Medicaid in New York State. VNSNY enrollees also much less likely to purchase Medigap insurance than enrollees at other sites. The lower Medigap enrollment rate among VNSNY enrollees may be explained perhaps by their relative poverty which may prohibit them from purchasing supplemental insurance policies.

Table 3-12

CNO Enrollee Enrollment in Insurance

	Carle		Carondelet		LAWBNP		VNSNY		TOTAL	
	#	% of Enr.	#	% of Enr.	#	% of Enr.	#	% of Enr.	#	% of Enr.
Has Medicaid	122	(4%)	21	(1%)	73	(3%)	69	(4%)	285	(3%)
Has Medigap	2682	(95%)	3057	(92%)	2285	(93%)	1278	(74%)	9302	(90%)
Has Other Insurance	455	(16%)	628	(19%)	212	(9%)	343	(20%)	1638	(16%)

Source: CNO Baseline Assessment Interviews.
Note: Enrollees who disenrolled and then reenrolled (1 percent of total enrollees) are not included in these figures

3.4 References

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4.0 EFFECTS OF THE CNO ON ENROLLEES' HEALTH, FUNCTIONING, AND SATISFACTION

People over the age of 65 suffer more from bodily pain, limitations in activities, depression, and major illness than do younger people; moreover, the incidence of new conditions steadily increases with age beyond age 60 or so (Dawson, Hendershot and Fulton 1987; Kennie 1993; Schneider 1993). The incidence of Alzheimer's Disease, for example, has been found to increase steeply with age (Hebert et al. 1995). Hence, service delivery systems that target the elderly should, at a minimum, pursue the following goals: 1) promote general well-being, 2) ameliorate, at least partially, those conditions that exist or perhaps slow their progression, and 3) reduce the incidence of new limitations or other adverse events. In the past the Medicare program has been criticized for its focus on treatment of illness and injury and relative inatrention to health promotion and preventive care. Whether CNOs can measurably improve the health and functioning of members depends not only on the effectiveness of preventive and therapeutic interventions, but also on the scope for possible improvement among members. If most members enjoy a high level of well-being, then effects on health outcomes may be difficult to detect unless the typical rate of decline, in the absence of interventions, is sufficiently high. Recent work by Mor et al. (1994) suggests that this is not the case. Using the Longitudinal Study on Aging, they found that among individuals aged 70-79 with no disabilities in 1984, only about one in six of those who were living in the community and were reinterviewed six years later had developed any impairments. If this rate of decline is linear — it may well be convex, which makes matters worse — it is probable that over the 15-month period separating baseline and first followup interviews, less than four percent of initially unimpaired individuals in the control group would have acquired disabilities. Under these circumstances, even a substantial CNO effect on the probability of decline among the unimpaired may well be undetected in the analyses performed here. Far fewer impaired than unimpaired beneficiaries applied to the four CNO programs. Nevertheless, to the effect that CNO effects are observed, they may turn out to be more visible among those who were impaired at baseline.

The direct impact of the CNO on the lives of enrollees can be difficult to measure because so much of what constitutes overall well-being is inherently difficult to capture and quantify using interviews and standard measures, We focus in this chapter on three components of personal well-being: health, functioning and satisfaction with health care. While the components are conceptually distinct, they are sometimes hard to disentangle. We follow Stewart and Ware (1992), who define health (well-being in their terminology) as a subjective state of wellness (which includes the absence of disease) of body and emotions. They distinguish health from functioning, a typically *observable* ability to perform usual behaviors and activities.

The measurement of satisfaction introduces new issues since it requires an entirely subjective assessment of the quality of care and feelings about the process of care, about the perceived attitudes of providers and their respect for one's time and personal dignity. Satisfaction by its nature constitutes a personal judgment of the behavior of health care providers in relation to the surveyed individual.

The following section outlines the measures used to capture health, functioning, and satisfaction. It also presents the analytic approach used here. Section 4.2 describes the mortality experience those who applied to the CNO, and of a random sample of non-institutionalized beneficiaries living in the same areas. Finally, Section 4.3 compares measures of health, functioning, and satisfaction for the treatment and control groups to draw inferences about the effect of the CNO intervention.

4.1 Analytic Measures and Approach

Analysis of the effects of CNO enrollment on the health, functioning and satisfaction of beneficiaries draws heavily on responses of CNO applicants to particular items on the baseline questionnaire, paired with responses to the same items at the time of the first follow-up interview, conducted by telephone 15 months after completion of the baseline interview. Individuals who had completed a follow-up interview by October 11, 1995 were included in the analytic file. This resulted in a sample of 2,097 beneficiaries in the treatment group and 964 in the control group.

Section 2 of the baseline and follow-up interviews consisted of administration of the well-known SF-36 Health Survey, developed in connection with the Medical Outcomes Study and now maintained by the Medical Outcomes Trust. The SF-36 is designed to gauge the level of functioning and well-being. Section 3 consisted of the Health Risk Appraisal, an instrument and scoring system developed by the Carter Center of Emory University in collaboration with the Centers for Disease Control. Although some items appearing on the Health Risk Appraisal (HRA) nearly duplicate similar items on the SF-36 (to the exasperation of some respondents), the orientation of the HRA is toward health behaviors and their implications for health risk, Section 4 of the interview elicited information on Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs), included here because of their established role in the evaluation of functioning. ADL and IADL items are designed to distinguish levels of functioning, particularly among older or frailer populations.' Finally, several questions concerning the respondent's satisfaction with health care and sense of its quality and availability were included in Section 6 of the questionnaire.

Measures from the SF-36

The SF-36 (Short Form - 36 questions) was first developed during the Health Insurance Experiment (Ware, Brook et al., 1980). The instrument, designed to be administered either in person or by telephone, was successively revised during the 1980s and is now maintained by the Medical Outcomes Trust. Raw scores derived from the questionnaire are transformed to produce subscores (from zero to 100) in each of eight dimen-

'The SF-36 is typically considered more likely to distinguish levels of functioning among the generally well population. while ADL and IADL scores are more likely to distinguish gradations in functioning among those who are at least slightly limited.

- I am satisfied with the care I receive from nurses.

In addition, respondents were asked 1) to compare the quality of health care at the time of the interview to that received one year ago (better, same, worse), 2) to express their confidence that they would receive needed health services (from l-very confident to 5-not very confident), and finally 3) to rate the overall health services received (from 1-excellent to 5-poor). We made no attempt to elicit direct expressions of enrollees' satisfaction with the CNO; such questions would permit no comparison with the control group. In the absence of such a reference point, even very high levels of satisfaction are difficult to interpret.

4.2 Health, Functioning, and the CNO

Before comparing the change in measures of health and satisfaction experienced by members of the treatment and control groups, it is instructive to examine the level of well being and function at baseline as measured by the SF-36 scales for treatment and control groups combined. Because national norms by age category are available for each of the eight concepts listed in Table 4.1 (Ware, 1993), the means for these measures among beneficiaries who applied to the CNO can be compared to those for a representative sample of the non-institutionalized elderly.

Table 4.3 displays mean and median values for each of the SF-36 scales for CNO applicants (both treatment and control) together with the national norms for two age groups. CNO applicants exhibited a markedly higher level of functioning and of physical and mental health than did the nationally representative reference sample that was used to compute the national norms. Indeed the median scores of CNO applicants for each of the eight health concepts more nearly approximated the 75th percentile (not shown here) than the median of the national norms. Because SF-36 scores for eligible *non-applicants are* not available, we cannot rule out the possibility that elderly people living in the CNO market areas are healthier and titter than a nationally representative sample of non-institutionalized elderly persons. Nevertheless, we had no reason, *a priori,* to suspect that this was true. It seems far more likely that CNO applicants were simply healthier than nonapplicants living in the same area. Furthermore, the hypothesis that CNO applicants tended to be in more robust health than non-applicants of the same age is strongly consistent with the results of Section 4.2 above, which demonstrated the significantly lower rate of mortality among CNO applicants (with the exception of Carondolet) than among the population eligible to join the CNO.

Table 4.3

Baseline SF-36 Subscores for CNO Applicants and National Norms, by Age Group

		PF	RP	BP	GH	VT	SF	RE	MH
Age 65- 74									
CNO Applicants	Median	90.00	100.00	84.00	77.00	70.00	100.00	100.00	88 00
	Mean	84.09	80.96	75.66	72.65	64.30	91.07	95.26	82 11
National Norm	Median	75.00	75.00	72.00	67.00	65.00	100.00	100.00	80 00
	Mean	69.38	64.54	68.49	62.56	59.94	80.61	81 44	76.87
Age 75+									
CNO Applicants	Median	80.00	100 00	72.00	67.00	65.00	100.00	100.00	80 00
	Mean	71.55	69.65	69.53	67.32	56.23	83.67	91.26	79 08
National Norm	Median	55.00	25.00	62.00	58.50	50.00	87.50	100.00	80 00
	Mean	53.20	45.28	60.88	56.66	50.41	73.89	63 18	73 99

Sources: Abt Associates analysis of CNO baseline and follow-up interviews
Ware (1993)

Effects of the CNO on General Health and Functioning

Analysis of the measures of general health and well-being drawn from the SF-36 and the Health Risk Appraisal produced no evidence of a CNO effect, positive or negative, on outcomes captured by these variables. Table 4.4 shows mean values for each of the eight SF-36 health scales at the time of the baseline interview and at 15-month follow-up for both the treatment and the control group. The proportional differences between baseline and follow-up scores for the two groups are on the order of one percent or less in each case. Statistical analysis of individual pre-post differences found no effects associated with membership in the treatment group even when the significance level of the tests was relaxed to 0.25 or more.

Values for Health Risk and Risk Age/Actual Age as computed from the Health Risk Appraisal are shown in Table 4.5. As above, the treatment and control group are virtually the same in terms of these measures.

Attempts were also made to stratify the sample by SF-36 or HRA subscores, measured at baseline. In this way it was possible to test separately for CNO effects on individuals in distinct risk categories. In no case were statistically significant effects detected.

Table 4.4

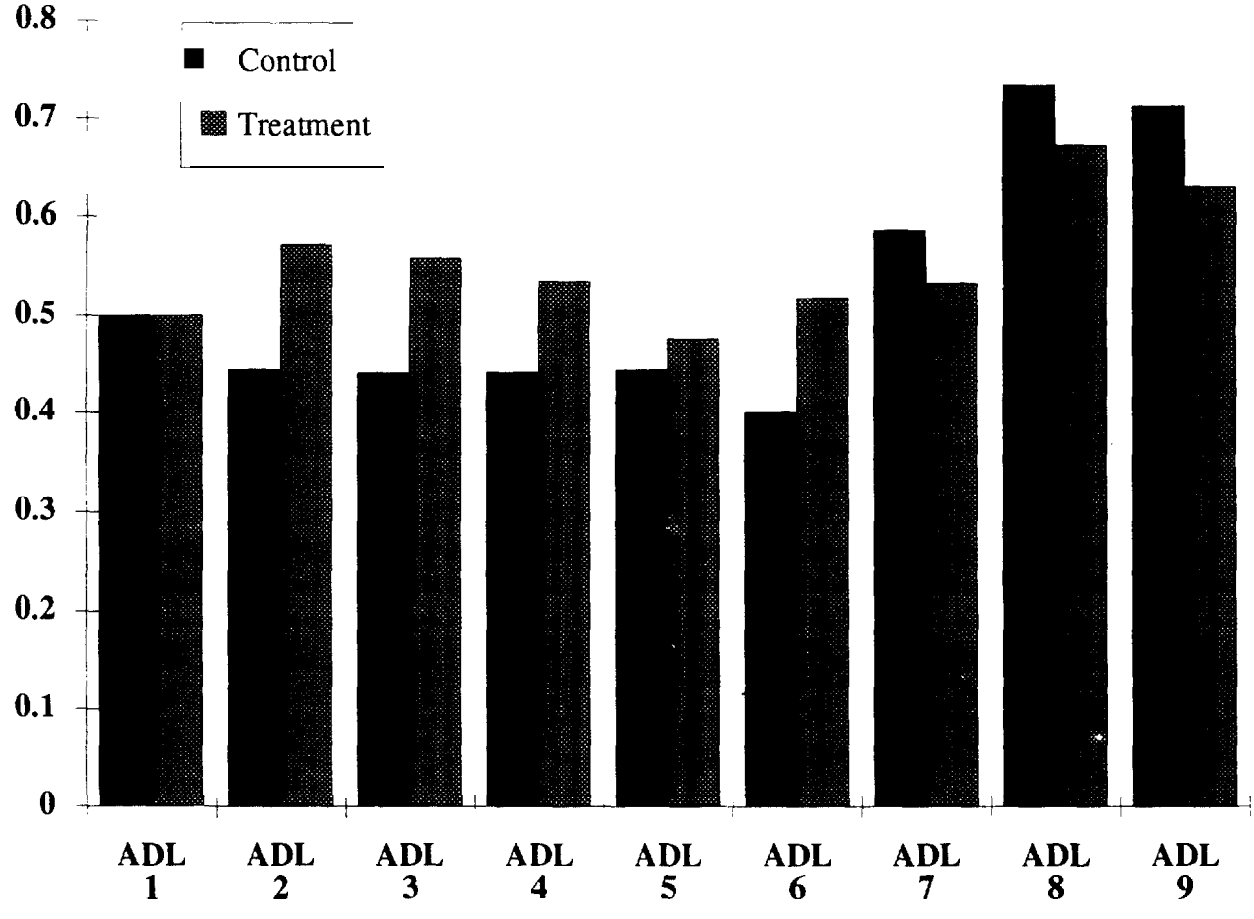
SF–36 Subscores for CNO Treatment and Control Groups, Baseline and Followup

	PF	RP	BP	GH	VT	SF	RE	MH
Treatment Group								
Followup	78.79	74.84	71.64	69.74	60.07	86.02	91.46	81.94
Baseline	77.89	75.26	72.73	70.07	60.04	87.09	92.99	80.37
Difference	0.90	-0.42	-1.09	-0.33	0.03	-1.07	-1.53	1.57
Control Group								
Followup	80.45	75.37	71.54	70.10	61.18	87.16	92.14	82.65
Baseline	79.24	76.47	73.01	70.02	61.84	88.58	94.10	8 1.47
Difference	1.21	-1.10	-1.91	-0.69	-1.34	-2.27	-2.46	0.57

Sources: Abt Associates analysis of CNO baseline and follow-up interviews.

Figure 4.1

Probability of ADL Independence at Followup Among CNO Applicants Who Reported Limitation in Same ADL at Baseline



To explore this relationship further, Tables 4.6 and 4.7 strati@ the sample of CNO applicants by number of ADL or IADL limitations reported during the baseline interview. The probability of reporting either zero or one limitation or of reporting three or more limitations is computed within each of the three strata for both the treatment and the control groups. Members of the treatment group who reported limitations in three or more ADLs or IADLs show a markedly greater tendency to improve and report zero or one limitation at time of follow-up. However, very few individuals reported as many as three limitations on either scale. Perhaps for this reason, none of the treatment/control differences in Table 4.6 are statistically significant. Only the difference in the last column of Table 4.7 is significant. The overwhelming majority of applicants to the CNO reported no more than one ADL or IADL deficit. Over the 15 months separating the baseline and follow-up interviews, only about three percent of this group acquired additional ADL limitations. For this generally well group of individuals then, there was no real possibility of detecting a CNO effect.

As a final means of examining the interaction between a possible treatment effect and the extent of functional limitation, a linear regression model was specified, using the total number of follow-up ADL or IADL limitations as dependent variables.* Covariates included age, gender, indicators for site, baseline number of ADL or IADL limitations, an indicator for assignment to the treatment group, and finally, the product (interaction) of the treatment indicator and the baseline number of reported limitations. This specification implies that the CNO treatment effect is not constant, but is instead linear in the number of limitations reported at baseline. Coefficients of treatment indicators are reported below in Table 4.8. Estimates of all model coefficients appear in Appendix Table 4.8a.

[2] Use of linear regression with a limited number (9 and 7, respectively) of distinct values for the dependent variable is admittedly problematic. In particular, the invocation of the normal distribution for hypothesis testing is strained in this situation. However, other approaches (for example the assumption that ADL and IADL sums follow a Poisson distribution) impose assumptions that are perhaps even more unrealistic. In future analyses, confidence intervals will be constructed using the bootstrap method to assure more robust tests of hypotheses.

Table 4.6

Probability of Specified Number of ADL Limitations at Followup, by Number of Limitations at Baseline, Treatment and Control

	Number of ADL Limitations at Baseline					
	o-1		2		3+	
	Treatment	Control	Treatment	Control	Treatment	Control
Probability of:						
O-l ADL Limitations at followllp	**0.96**	**0.97**	0.70	0.68	**0.36**	**0.29**
3+ ADL Limitations at followup	**0.02**	**0.02**	0.17	**0.12**	0.50	**0.58**
	1,883	893	81	25	133	

Sources: Abt Associates analysis of CNO baseline and follow-up interviews.
Note: No treatment/control differences were statistically significant at the 0.05 level

Table 4.7

Probability of Specified Number of IADL Limitations at Followup, by Number of Limitations at Baseline, Treatment and Control

	Number of IADL Limitations at Baseline					
	O-l		2		3+	
	Treatment	Control	Treatment	Control	Treatment	Control
Probability of						
O-1 IADL Limitations at followup	**0.97**	**0.97**	0.65	0.58	0.58**	0.15**
3+ IADL Limitations at followllp	**0.02**	**0.02**	0.19	0.16	0.29**	0.67**
	1,927	903	69		100	39

Sources: Abt Associates analysis of CNO baseline and follow-up interviews.
Note: **Treatment/control difference statistically significant at the 0.05 level.

Table 4.8

OLS Regression Estimates of CNO Effects on ADL and IADL Limitations 15 Months After Baseline Interview

Dependent Variable:	Number of ADL Limitations at Followup	Number of IADL Limitations of Followup
Variable		
Treatment group	0.04 (0.03)	0.01 (0.03)
Treatment group • Baseline ADL Sum	-0.05** (0.027)	
Treatment group • Baseline IADL Sum		-0.09** (0.03)
n	2,810	3,057
R^2	0.38	0.43

Sources: Abt Associates analysis of CNO baseline and follow-up interviews.
Note: **Statistically significant at 0.05 level.
*Statistically significant at 0.10 level.

The CNO effect, as measured by the coefficient of the indicator variable "Treatment" is not statistically significant in either case. However, both interaction terms are negative (indicating a protective or ameliorative effect) and statistically significant – results that permit a simple interpretation. There is no basis for concluding that the CNOs prevented limitations from arising among those who were initially independent in all ADLs or IADLs. This need not mean that the CNOs cannot alter the probability that limitations develop in a population of healthy and independent elderly persons. It may instead reflect the relative infrequency with which limitations develop among the unimpaired elderly and the consequent lack of statistical power of comparisons between the treatment and control groups. Over the 15-month period under study, very few individuals (about 3 percent) who were independent in all ADLs or IADLs at baseline deveioped new limitations, a figure remarkably close to our earlier approximation of 4 percent based on Mor et al. (1994). A simple calculation suggests that even if the CNOs could prevent 1 out of every 4 such instances of functional decline, the sample sizes used here would furnish only about 20 percent power to detect a difference behveen treatment and control groups

Among those with preexisting ADL or IADL limitations, however, improvement was greater for those assigned to the treatment (CNO) group. For ten hypothetical individuals, each with two ADL limitations, enrollment in the CNO is estimated to have reduced the total number of limitations in the group by one – more precisely, by one more (-0.05·2·10) than if members of the group had not enrolled in the CNO. For IADLs, the

CNO effect is somewhat greater still, as indicated by the interaction of treatment status with the number of baseline IADL limitations.

Figure 4.3 displays the relationship between the number of baseline and follow-up limitations for a hypothetical 70 year-old male in both the treatment and control groups. The figure is based on the estimated regression coefficients reported in Appendix Table 4.8a.[3] The CNO effect is small, but clearly evident. For reasons that remain unclear, no relationship of this sort was evident among the SF-36 Health Status scales.

Effects of the CNO on Overall Satisfaction with Health Care

Table 4.9 presents the responses of individuals in the treatment and control groups to questions designed to elicit satisfaction with health care, as reported during the follow-up interview. The results hint, as before, that CNO enrollees are at least slightly more satisfied with their health care, but this conclusion must be treated with caution. Two of the treatment/control differences in the table are significant at the 0.05 level – the proportion who strongly agree that health care professionals are courteous and respect privacy and the proportion who are strongly satisfied with care received from nurses. While these results suggest that CNO enrollees are happier with the process of health care and the providers that deliver that care than are members of the control group. ***the*** assertion of statistical significance is problematic. The difficulty arises from conducting t-tests on seven individual measures of satisfaction. At the conventional 0.05 level of significance, the probability that at least one of the seven differences is incorrectly found to be significant is not 0.05, but something larger than this. If the measures are independent, the probability of incorrectly concluding that one or more treatment/control differences exist is about 0.3. To prevent this sort of error, analysts typically tighten the significance criteria applied to individual tests conducted within a larger set. In this context, the correction, known as the Bonferroni correction, results in a significance standard of $\alpha^* = 0.05/7 = 0.007$ The actual significance level of the two differences at issue in Table 4.9 is about 0.011, exceeding the Bonferroni standard. Hence we cannot truly conclude that satisfaction was higher among the treatment group. At the same time, we cannot dismiss the result. The significance attained by the individual differences is consistent, after Bonferroni adjustment, with an overall significance level of 0.07. We find ourselves then, in much the same position, as in the analysis of mortality – of tantalizing results near the standard for statistical significance, and awaiting the additional data and larger sample size to be provided in the final evaluation report.

[3] The intercept in each case is computed as the simple average of the site-specific intercepts, plus 70 times the coefficient of age.

Figure 4.3
Regression Predictions of Number of Limitations at Follow-up for Males of Age 70 Years

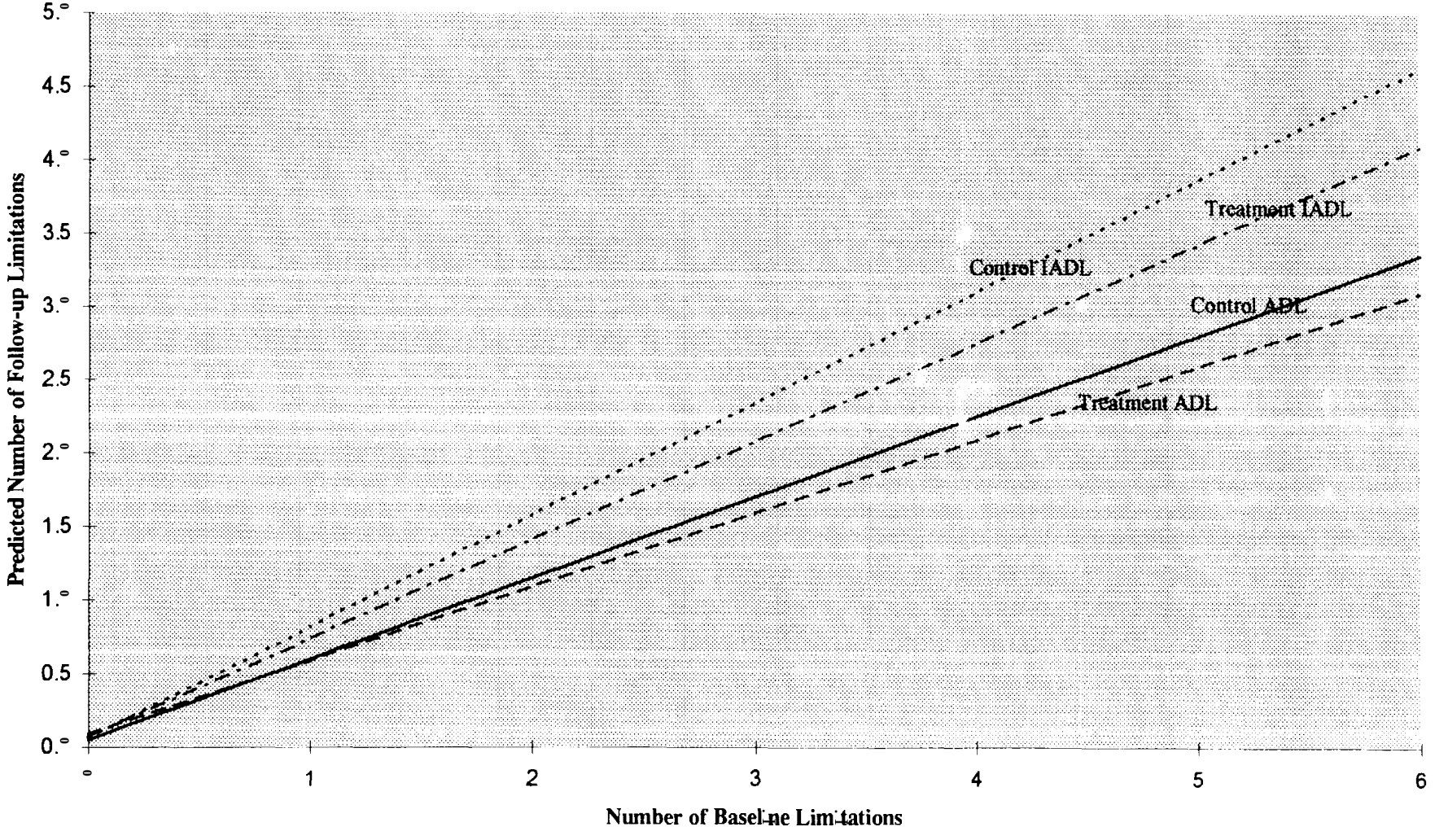


Table 4.9

Satisfaction with Health and Nursing Care

	Time with health professionals about right		Money I pay for health care is reasonable		Health care prof I know are courteous and respect privacy		I am satisfied with care I receive from nurses	
	Strongly agree	Disagree/Strongly disagree	Strongly agree	Disagree/Strongly disagree	Strongly agree	Disagree/Strongly disagree	Strongly agree	Disagree/Strongly disagree
Treatment	*0.76*	*0.05*	*0.59*	*0.16*	*0.93*	*0.02*	*0.90*	*0.02*
	n=1845		*n-1860*		*n-1897*		*n=1861*	
Control	*0.76*	*0.05*	*0.59*	0.17	*0.90*	0.01	*0.87*	*0.01*
	n=833		*n -8.53*		*n-871*		*n -830*	

Sources: Abt Associates analysis of CNO baseline and follow-up interviews.

	Quality of health care, compare to one year ago		Confidence in getting needed health services		Overall rating of health care services	
	Better	Worse	Very confident	Not very confident	Excellent	Fair/poor
Treatment	*0.13*	*0.02*	*0.79*	*0.04*	*0.44*	*0.03*
	n=1798		*n=1883*		*n=1902*	
Control	0.11	*0.02*	*0.78*	*0.03*	*0.45*	*0.02*
	n=816		*n=870*		*n-881*	

Source: Abt Associates analysis of Medicare Enrollment Database.

4.3 References

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Appendix to Chapter 4

The CNO and Enrollee Mortality

Any innovation in the structure or process by which health care is delivered can produce changes in the instantaneous probability of death for individuals receiving the care and consequently in life expectancy. Even small alterations in the frequency of contact and observation and in the care with which chronic or emergent conditions are monitored can lead to early detection of life-threatening conditions or the prevention of risky behavior or improved compliance with a recommended course of treatment. Nevertheless, numerous demonstration projects affecting the financing and delivery of care have failed to show statistically significant effects on mortality in the elderly

If the CNO were to prevent death (i.e., to delay the time of death) disproportionately among individuals who would otherwise show greater increases (or slower declines) in observed measures of health and functioning than otherwise similar individuals, then the estimated effect of the CNO on these same observed measures of health and functioning will be overstated. For example, suppose that the primary effect of the CNO on the probability of death were to operate through encouraging safer driving and use of seat belts. Furthermore, suppose that those individuals whose health and functioning were deteriorating most are the least likely to drive or to ride in a car. The lives saved through the operation of the CNO would then be disproportionately those of healthy people. In consequence, the estimated effects of the CNO on health and functioning would be biased upward because a small number of controls who were othenvise healthy would have died and so would not be observed at follow-up.

If, conversely, the CNO were to prevent death disproportionately among those who would otherwise exhibit the greatest deterioration in observed measures, then the estimated effect of the CNO on these measures will be biased downward. Suppose, for example, that the CNO prevented deaths primarily through more careful monitoring of individuals who live at home but have unstable medical conditions. If these individuals (whose deaths are delayed as a result of some CNO intervention) deteriorate faster on average than other individuals, then more from the treatment group will survive to be observed again at time of follow-up, so the estimated effect of the CNO will be biased downward.

Table 4.10 presents the number of deaths and elapsed total person-months in each CNO site. The last column of each table displays the number of deaths and person-months for the eligible comparison sample in each site. Immediately obvious in the table is the strikingly lower rate of mortality among CNO applicants in both treatment and control groups of three sites than among beneficiaries in the corresponding eligible comparison sample. Mortality among members of the pooled treatment and control groups over the period from January 1994 through June 1995 was approximately half that among members of the eligible comparison sample at the Illinois,

Minnesota, and New York sites. In each case, the difference was statistically significant.[4] Despite the results of the previous chapter which suggest that applicants were broadly similar to the eligible population. at least in terms of age and prior hospitalization, these results suggest that CNO applicants were substantially healthier than the eligible Medicare population in three of the sites. We cannot explain convincingly why applicants to the Carondelet CNO did not conform to this pattern and more nearly reflected the overall Medicare population in terms of mortality. Anecdotal information does suggest that Medicare beneficiaries in Arizona are more familiar with HMOs and managed care plans. Consequently managed care plans may be less likely to experience favorable selection there than 'in other parts of the country.

In two of the sites, the rate of mortality was lower for the treatment group than for the control group. At the other two, and in particular at VNS, the rate was substantially higher for the treatment group. As striking as these results are, particularly for Carondolet and VNS, none of them are statistically significant at the 0.05 level. The rate ratios and 95 percent confidence intervals for each site are displayed in the bottom panel of the table. The pooled Mantel-Haenszel estimate of the ratio and its confidence interval are also shown. As the 95 percent confidence interval shows, there is no statistically significant difference between the treatment and control group for all sites combined.*

We are left then with a difficult problem of interpretation. While we cannot reject the hypothesis that the treatment and control groups experience the same mortality, we are unable to assert with confidence that they are indeed the same. Because the number of person-months at risk is expected to more than double by the end of the demonstration, a more definitive examination of the issue is expected in the Final Evaluation Report.

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[4]The significance level for each of the tests was reduced via Bonferroni adjustment from 0.05 to 0.0 13 to insure that the probability of Type I error remained at 0.05 while carrying out four distinct tests.

[5]The confidence interval for the rate ratio (RR) is computed as $EXP[\ln(\hat{RR} \pm 1.96\,SE]$, where SE is the standard error of the estimate. See, for example, Rothman (1986) which also gives the formula for the pooled Mantel-Haenszel estimator.

Appendix Table 4.10

Mortality for Treatment, Control, and Eligible Comparison Sample

	Treatment	Control	Comparison
Carle Clinic			
Deaths	36	13	158
Person-months elapsed	22,997	11,009	41,793
Deaths per 10^5 person-months	157	118	378
Carondelet			
Deaths	38	28	66
Person-months elapsed	14,738	7,318	22,155
Deaths per 10^5 person-months	256	383	298
Living at Home			
Deaths	25	13	145
Person-months elapsed	14,784	7,322	42,169
Deaths per 10^5 person-months	169	178	344
Visiting Nurse Service of NY			
Deaths	33	9	178
Person-months elapsed	11,886	5,830	41,948
Deaths per 10^5 person-months	278	154	424

	Rate Ratios (Treatment/Control) for Beneficiary Mortality			
	Rate Ratio	**SE**	**95% Confidence Interval**	
Carle	1.326	0.324	(0.703,	2.500)
Carondolet	0.669	0.249	(0.411,	1.091)
Living at Home	0.952	0.342	(0.487,	1.862)
Visiting Nurse Service of NY	1.798	0.376	(0.861,	3.758)
Pooled (Mantel-Haenszel)	1.025	0.153	(0.759,	1.384)

Source: Abt Associates analysis of Medicare Enrollment Database.

Appendix Table 4.8a

OLS Regression of ADL and IADL Limitations at Followup on Baseline Characteristics

Dependent Variable:	Number of ADL Limitations at Followup	Number of IADL Limitations of Followup
Variable		
Intercept	-0.23 (0.16)	-0.72** (0.17)
Treatment group	0.04 (0.03)	0.01 (0.03)
Baseline ADL Sum	0.55** (0.03)	
Baseline IADL Sum		0.76** (0.03)
Treatment group • Baseline ADL Sum	-0.05** (0.027)	
Treatment group • Baseline IADL Sum		-0.09** (0.03)
Age (at Baseline)	0.005** (0.002)	0.01** (0.002)
Female	0.01 (0.03)	-0.08** (0.03)
IL	-0.08** (0.04)	-0.07 (0.04)
MN	-0.06 (0.04)	-0.05 (0.05)
NY	-0.08* (0.05)	-0.12** (0.06)
n	2,810	3,057
	0.38	0.43

Sources: Abt Associates analysis of CNO baseline and follow-up interviews
Note: **Statistically significant at 0.05 level.
*Statistically significant at 0.10 level.

5.0 EFFECTS OF THE CNO ON USE OF SERVICES AND MEDICARE OUTLAYS

The previous chapter considered the effects of the CNO directly on the lives of its enrollees, as measured by their health, satisfaction with health care, and their level of functioning in everyday life. This chapter compares Medicare outlays for CNO enrollees with outlays for the control group to produce an estimate of the net cost or saving that the CNO generates for the Medicare program. The analyses here are aimed at three principal issues,

- Do beneficiaries enrolled in the CNO receive more or fewer of the services covered in the CNO package than do members of the control group?
- Do CNO enrollees use more or less of the Medicare-covered services that are not part of the CNO package?
- What is the relationship between total Medicare expenditure for the treatment (CNO) group and for the control group?

Each of the three questions is addressed in turn by comparing the resources used by CNO applicants assigned to the treatment and to the control groups. Because applicants were randomly assigned to treatment or control status, the difference in mean utilization and expenditure of the two groups is arguably the most accurate possible estimate of the effect of the CNO demonstration.

The analyses described in this chapter draw on three data sources. Services provided to CNO enrollees were drawn from the CNO utilization files maintained by each of the sites and submitted quarterly to Abt Associates as described in Chapter 2. The use of and payment for services covered under Part A and B of Medicare were summed to the beneficiary-month level for 8,936 individuals who were randomized before April 1, 1995. (Again see Chapter 2 for details on the construction of this file.) Finally, monthly capitation payments for CNO enrollees were obtained from data provided by the Division of Demonstration Support at the Health Care Financing Administration. For each individual randomized, data were collected for the 12 months prior to the month of randomization and for all months from randomization through June, 1995. The resulting analytic file contained 203,795 person-months of data.

Section 5.1 considers the use of CNO-covered services. Section 5.2 compares use of those Medicare services outside the CNO bundle. Finally, Section 5.3 examines total Medicare outlays for the treatment and control groups. Appendix 5.A briefly treats issues of computation and statistical testing. Appendix 5.B presents site-by-site results for utilization and outlays as shown in Tables 5 l and 5.5.

5.1 Use of Services in the CNO Package

Estimating the effect of CNO enrollment on the use of those services covered by the CNO raises complex methodological issues for the evaluation. For these services – Medicare home health, durable medical equipment, and ambulance, among others – data are reported in two quite distinct ways for the treatment and control groups.

Service use by the control group is recorded by extracting provider claims from the National Claims History File. a data system maintained by the Health Care Financing Administration. These claims are billing documents. submitted by providers whose interest in accuracy derives from a desire to be paid in a timely fashion. Service use for CNO enrollees is recorded from utilization data maintained for the demonstration by each of the CNO sites. The sites clearly devote substantial time and attention to recording time and utilization data. In addition, Abt Associates performs additional checks on the data as they arrive each quarter. Nevertheless, there can be little doubt that staff time devoted to recording services provided has other uses, both for CNOs and for fee-for-service providers. Given the distinct incentives faced by the two types of providers it is hard to believe that complete comparability of data wil! be achieved. To increase the comparability of data for treatment and control groups, use of home health and ambulance services will be reported in terms of the number of days for which care of a particular type was provided.

It is important to bear in mind that beneficiaries assigned to the treatment group can and do receive covered services from the fee-for-service sector. This can happen in two ways. First, CNO applicants assigned to the treatment group may fail to enroll; or they may disenroll at some point following their initial enrollment. Should these individuals use Medicare home health, ambulance or durable medical equipment, claims will be submitted and will therefore enter the analytic files. Second, if CNO members receive covered services outside the CNO, claims submitted by non-CNO providers on their behalf will be processed and paid. There is no mechanism to prevent such payment as there is for beneficiaries enrolled in Medicare risk HMOs. Some out-of-plan use is nearly inevitable. CNO enrollees may forget to inform physicians, hospital nurses, or discharge planners that they are enrolled in a CNO. Orders for home health care or durable medical equipment may therefore be directed to other providers. Even patients who later realize that they are receiving care that should be provided by the CNO may be reluctant to speak up because they want care "as my doctor ordered it."

Table 5.1 shows the use of services per beneficiary per month for the principal components of the CNO package.[1] For the treatment group, services received from both CNO and non-CNO providers are shown. Entries in the table are the means, computed across persons, of average monthly use in each category. They differ from the more common "per member per month" figures insofar as they are person-weighted rather than month-weighted. Means were computed in this way in order to avoid underestimation of standard errors and improper detection of significant differences between the treatment and control groups. for further details, see the appendix to this chapter.

[1] Durable medical equipment is not reported in the table because suitable measures of quantity that are comparable for treatment and control groups are not available at this point.

Table 5.1

CNO-Covered Services Received per Beneficiary per Month from CNO and FFS Providers: Treatment and Control Groups

	Control *(n=2935)*	Treatment *(n=6001)*		
		Total	CNO	FFS
Skilled nursing home visits	0.117	0.105	0.061	0.044
Physical therapy home visits	0.048	0.039	0.026	0.013
Speech therapy home visits	0.007	0.002	0.002	0.000
Occupational therapy home visits	0.012	0.007	0.004	0.003
Medical social worker home visits	0.004	0.002	0.001	0.001
Home health aide visits	0.136	0.097	0.053	0.044
Ambulance days	0.009	0.013	0.003	0.010

Source: Abl Associates' analysis of National Claims History and CNO utilization tiles

Although the treatment group received fewer services than the control group in six of the seven categories, consistent with the findings of Schlenker, Shaunessy and Hittle (1995), none of the differences was found to be statistically significant. A more striking aspect of the table is the high level of fee-for-service use of CNO-covered services by beneficiaries assigned to the treatment group. In nearly every case, fee-for-service care accounted for one-fourth to one-third of total services received by the treatment group. While some fee-for-service use is not surprising, as noted just above, the magnitude of this use is much greater than expected. Furthermore, of the 65,027 person-months of observed time of beneficiaries assigned to the treatment group, only 5,365 (8.25 percent) were associated with unenrolled months after randomization. A substantial portion of fee-for-service use by individual in the treatment group is therefore likely to be due to out-of-plan use by individuals currently enrolled in the CNO.

Table 5.2 decomposes the fee-for-service means for the treatment group into their constituent parts: fee-for-service use by CNO enrollees while enrolled in the CNO and fee-for-service use by beneficiaries assigned to the treatment group but not enrolled in the CNO at the time the service was provided. Because the denominator for each individual is total time observed in the treatment group, not time enrolled or disenrolled, and because the means are person weighted, not time weighted, the means for each of the two components in Table 5.2 sum to the corresponding fee-for-service mean in Table 5 1. With the exception of three infrequently used home care

Table 5.2

Monthly Mean CNO-Covered Services Received By the Treatment Group Under Fee-for-Service: Enrolled and Unenrolled Periods

	Enrolled	Unenrolled
Skilled nursing home visits	0.024	0.019
Physical therapy home visits	0.008	0.004
Speech therapy home visits	0.000	0.000
Occupational therapy home visits	0.001	0.002
Medical social worker home visits	0.001	0.000
Home health aide visits	0.026	0016
Ambulance days	0.080	0.003

Source: Abt Associates' analysis of National Claims History tiles.

services, the preponderance of fee-for-service use by the treatment group was by beneficiaries currently enrolled.[2] There are several possible explanations for out-of-plan use, none of which have yet been investigated.

Emergencies. In times of crisis or personal distress, especially surrounding a medical emergency or hospitalization, individuals may easily forget their commitment to receive covered services from the CNO. High out-of-plan use of ambulance service is perhaps unsurprising for this reason. Among enrollees who are hospitalized, some decisions for home care may be arrived at in consultation with children or other relatives who may be unaware of the patient's enrollment in the CNO.

Lack of awareness. New enrollees may require time to become accustomed to limits that CNO membership places on their freedom of choice of providers. Some enrollees who join the CNO despite established relationships with other providers may be slow to sever their earlier ties. At least a few may be unaware of the type of care that must now be received through the CNO, no matter how vigorously the CNO publicizes member responsibilities under the plan. One can expect this problem to be more severe the greater the number of referral sources and alternative providers in an area simply because more of them will then be unaware of the possibility that an elderly individual might be a member of a CNO. This conjecture is borne out in Appendix B, Tables 5.1 a-5 1d, which show greater out-of-plan use by CNO enrollees at the VNSNY (Queens, NY) and Carondelet (Tucson AZ) sites.

Disenrollment. The effective date of disenrollment for CNO members who choose to leave the plan is the end of the calendar month in which they inform the CNO that they wish to disenroll. However, some individuals may treat their decision to disenroll as taking effect immediately. They might therefore begin to seek out and receive services from non-CNO providers for a period of some weeks while still on the membership roster of the CNO.

[2] This result is ***not*** an artifact of the much greater number of enrolled months among members of the treatment group. The means are computed over all members of the treatment group, even if never unenrolled after randomization.

Future exploration of out-of-plan use will focus on the location of non-CNO providers, the relationship between out-of-plan use and any concurrent or recent hospital stays, and the possible concentration of out-of-plan use around the times of enrollment or disenrollment.

5.2 Use of Non-CNO Services Covered by Medicare

Three important elements of Medicare-covered health services are not part of the CNO service package: acute-care hospital stays, physician visits, and care provided in skilled nursing facilities (SNFs). On *a priori* grounds, we had conjectured that any effects of the CNO on the probability of hospital or SNF admission would be quite weak, if indeed they existed at all. While it is surely true that more diligent and attentive community nursing care might detect and address potentially serious emergent conditions and might also prevent serious exacerbations of existing conditions, it is hard to believe that early detection and preventive care could avert more than a small proportion of hospital or SNF admissions. At the same time, the possibility for somewhat greater substitution between health services delivered in the community by nurses and certain services delivered in an office by a physician suggested the possibility that the treatment group might display a measurable reduction in the number of physician visits, relative to the control group.[3]

The analysis of Medicare claims data for the three services failed to detect any CNO effects at conventional significance levels using conservative statistical tests. Nevertheless, the results at this point are almost completely opposite to the conjectures above. Table 5.3 displays mean values for physician visits per month, hospital inpatient admissions per month, and skilled nursing facility admissions per month, for the treatment and control groups. Physician visits per month are virtually identical for the treatment and control groups, particularly in the demonstration period. While this would appear to rule out the most promising route by which the CNO might reduce the use of care outside the CNO service package, the use of hospital and SNF care by the treatment and control groups indicates that CNO enrollees *may have* experienced lower rates of hospital and SNF admission than they would have had they not joined the CNO. The mean value of hospital admissions per month was 7 percent lower for the treatment group than for the control group in the period following random assignment. Furthermore, the mean for the treatment group in the 12 months before randomization was nearly 6 percent higher than that of the control group. In consequence, mean hospital admissions per month grew by 22 percent across the two periods for the control group and only 9 percent for the treatment group. Neither the difference in probability of hospital admission after randomization nor in its growth from the pre-randomization to the post-randomization period were statistically significant at the standard 0.05 level. The

[3] It should be noted that these hypotheses rest on the conjecture that services provided by the CNO truly substitute for physician, hospital, or SNF care through prevention and early intervention before conditions require more resource-intensive care. It is quite possible that the CNO is more properly a complement to these forms of care, increasing their use (at least in the short run) by earlier detection of conditions requiring hospital or physician care.

Table 5.3

Mean Utilization Per Month for Three Types of Non-CNO Services

	Control		Treatment	
	Pre-random assignment	Post-random assignment	Pre-random assignment	Post-random assignment
Physician visits	0.4410	0.5074	0.4308	0.5042
Hospital admissions	0.0164	0.0205	0.0174	0.0191
SNF admissions	0.0014	0.0044	0.0015	0.0037

Source: Abt Associates' analysis of National Claims History files.

significance level for both of the contrasts was instead about 0.13. For SNF admissions the estimated effect was similar. The mean number of SNF admissions per month was about 17 percent lower for the treatment group than for the control group in months after randomization, a result significant only at about the 0.12 significance level.

5.3 Does the CNO Save Money?

The quantitative analysis thus far has shown clear effects of CNO enrollment on the level of functioning for those who were moderately or severely impaired at the time of randomization. It has also hinted at positive effects on beneficiary satisfaction with health care and on the probability of admission to hospital or to nursing home. We emphasize the verb "hint" because at this time, these latter effects do not meet accepted statistical standards for confirming a result.[4] It remains to ascertain whether enrollment in the CNO is associated with an increase or with a decrease in overall Medicare outlays for beneficiaries and to identify, if possible, the components of any net cost or saving. We acknowledge at the outset that the question is premature at this point. Demonstration projects such as the CNO nearly always require an intial period of adjustment in which alternative approaches and methods are tried out, modified, and in some cases discarded in favor of other more productive or efficacious procedures. Moreover, the initial months of the project were characterized by an influx of new members — a situation completely atypical of the normal steady state of operation for the CNO — who required rapid assessment and, in some cases, arrangements for care. The intial months of the CNO demonstration were

[4] More precisely, the hypotheses that the means of these outcome variables are equal for the treatment and control groups cannot be rejected at the 0.05 significance level.

therefore almost surely the *least* cost effective period in its expected 36 months of operation. It would be unfair to suggest that the CNO should have saved money by mid-1995.[5]

There are nevertheless some very good reasons to compare total Medicare costs for the treatment and control groups up to this point. Simple curiosity is one. Because the data are available, many interested parties have expressed interest in knowing what the comparison shows at the midpoint of the demonstration. The comparison is also a useful exercise, permitting the audience of this report to see how the calculations are performed and providing an opportunity for them to offer comment and criticism.

To construct the elements of total Medicare outlays, Medicare payments were aggregated into four composite variables for each beneficiary. These four variables are defined by Medicare program (Part A or Part B) and by whether or not services were part of the CNO package. The four variables and their constituents are listed below in Table 5.4.

Table 5.4

Medicare Payment Variables

Part A: Outside CNO service package	Inpatient short-stay hospital Inpatient long-stay hospital Hospital outpatient Skilled nursing facility Hospice
Part B: Outside CNO service package	Physician visits Physician other Part B other (includmg lab, ancillary, and outpatient therapy)
Part A: In CNO service package	Home health care (6 disciplines)
Part B: In CNO service package	Durable medical equipment [rental and non-rental, incl oxygen] Prosthetics/orthotics Supplies Ambulance

Mean outlay per month in each of the categories is shown in Table 5.5. Because hospital stays are so large a share of Part A expenditures, the 7 percent difference in hospital stays between the treatment and control groups translated almost directly into a difference of about 6 percent between the two groups in expenditures for health care outside the CNO service package. The capitation payment plus the mean fee-for-service use of

[5] It is important to recognize that even marked increases in CNO efficiency will not by themselves change the cost comparison for treatment and control groups. These comparisons are based on Medicare ***outlays.*** The only actions available to the CNOs which alter this calculation are those which tend to reduce use of services outside the CNO service package.

beneficiaries assigned to the treatment group, however, were substantially higher than the mean Medicare payment for CNO-type services consumed by the control group. The overall estimated mean Medicare outlay for members of the treatment group is consequently higher than that of the control group by some $24, or about 7 percent.

Before turning to issues of statistical significance, it is important to return briefly to the matter of Medicare outlays on behalf of individuals in the treatment group for services that should have been covered under the CNO capitation payment. We saw in Section 5.1 that such use could arise because an applicant assigned to the treatment group failed to enroll in the CNO or dropped out of the CNO before the end of the observation period. It can also occur simply because CNO enrollees are not prevented from receiving any Medicare-covered services in the fee-for-service sector. Medicare costs associated with both of such events are included here with other costs incurred by the treatment group. It is important to understand why this must be done so that the method employed here is not mistakenly seen as one that "sets the cost-effectiveness bar too high." Consider first those costs incurred by individuals who were randomized but who did not enter or who left the CNO. To ignore these costs. that is to omit them from the analysis or to set them to zero, is clearly incorrect. At the very least, these

Table 5.5

Mean Medicare Outlay per Month for Four Categories of Care: Treatment and Control

	Treatment	Control	Difference
Part A: Outside CNO Service package	$207.80	$222.13	
Part B: Outside CNO service package	96.88	101.05	
Total outlays for non-CNO services	304.68	323.18	-$18.50
Part A: In CNO service package	8.40	25.57	
Part B: In CNO service package	6.38	9.66	
CNG capitation payment	63.07	-----	
Total outlays for CNO-covered services	77.85	35.23	42.62
Total Medicare outlay	$382.53	$358.41	$24.12

Source: Abt Associates Inc. analysis of CNO payment records and Medicare National Claims History Files.
Note: In the 12-month pre-randomization period, mean Medicare monthly outlay was $230.68 for the control group and $232.78 for the treatment group. The monthly CNO case management fee is not included in treatment group outlays.

individuals would have generated capitation payments, had they joined or remained in the CNO. Although we have not explored the matter in detail, preliminary estimates suggest that eliminating these fee-for-service expenditures and adding the appropriate capitation payment would increase rather than reduce the discrepancy between the treatment and control groups. Nor would it be correct simply to eliminate from the analysis those persons or person-months in which members of the treatment group were not enrolled in the CNO. Such people (or person-months) have counterparts in the control group – people who would have failed to enroll or who would have disenrolled had they been assigned to the treatment group. But these counterparts cannot be identified, and so could not be eliminated from the analysis along with unenrolled members of the treatment group. Removing nonparticipating treatments, therefore, has an unpredictable effect. If treatment group members who drop out or do not enroll incur high-than-average costs, then the estimated cost saving associated with the CNO will be overstated: if they incur lower-than-average costs, then estimated cost saving will be understated.

A different sort of argument applies to "inappropriate" fee-for-service costs incurred by CNO members. Here some have argued that a fully mature CNO system would find ways to minimize such costs or to eliminate them altogether. This argument deserves further exploration; the CNO program does not benefit from the "system lockout" that prevents Medicare fee-for-service payments for beneficiaries enrolled in risk HMOs. Implementation of a Medicare CNO option would probably be accompanied by a partial lockout from the payment system, preventing CNO members from receiving services outside the plan. At this point, however, it is evident from Table 5.5 that even eliminating *all* cost associated with fee-for-service expenditures by the treatment group for care covered under the CNO would not change the overall conclusion. Estimated cost remains higher for the treatment (CNO) group.

Because the variances of Medicare expenditure and its components are quite high, none of the treatment-control differences in Table 5.5 are statistically significant at the 0.05 level. However, the CNO capitation payment does not include the $20 per member per month payment for case management. When this amount is added to the capitation payment (for those months in which members of the treatment group were enrolled). the excess of monthly outlays for the treatment group relative to the control group rises to $42.49, a difference that is statistically significant at the 0.05 level.

By the midpoint of the CNO demonstration, then, monthly Medicare expenditures on behalf of the treatment group were about 7 percent higher than for the control group if the case management payments to CNOs are ignored. Including the case management payment in the calculation increases the difference to about 12 percent. There are, as noted earlier, good reasons to believe that this discrepancy is a poor indicator of the long-term cost effectiveness of CNO plans. Furthermore, no reliable methods exist for teasing out the components of total expenditure that could be the result of start-up processes. A more accurate estimate of the financial impact of the CNO demonstration must await analysis of all demonstration data in the final report.

Appendix 5.A: Testing Statistical Significance

Randomization greatly simplifies the nature of significance testing carried out here. However, variables observed in distinct months for the same person cannot be considered independent. Therefore, tests were conducted on the mean value of individual mean utilization and expenditure per month. To see how these means were constructed, consider for example, total Medicare expenditure for person i in month t, x_{it}. The subscript t is set to 0 in the month of randomization; t increments forward from 0 to m_i, the number of months observed after randomization. For each person, 12 months are observed before randomization. Hence t runs from - 1 to - 12 in the pre-randomization period. Individual i's monthly mean expenditure in the pre-randomization period is therefore given by:

$$Y_{i,PRE} = \frac{1}{12}\sum_{t=-1}^{-12} x_{it}$$

In the post-randomization period, we have:

$$y_{i,POST} = \frac{1}{m_i}\sum_{t=0}^{m_i} x_{it}$$

Means of these "person-level means" were computed separately for the treatment and the control groups. The resulting estimated utilization and expenditure means are consequently person-weighted, not month-weighted. Most tests were conducted on treatment/control differences. That is, the difference $\bar{y}^{T}_{i,POST} - \bar{y}^{C}_{i,POST}$ was computed to test for differences in the underlying population means. This has the advantage of producing simple statistical tests, but tends to emphasize disproportionately the early effects of CNO enrollment. A person enrolled for 4 months receives the same weight as a person enrolled for 14 months.

To explore the effects of this approach, the analysis of Medicare outlays employed a second approach to testing. This method used each person-month as a unit of observation in a regression-based approach that allows each individual a separate intercept term, effectively removing persistent person-level effects from the disturbance. The specification is:

$$x_{it} = \beta_{0i} + \beta_1 TREATMENT_i + \beta_2 POST_t + \beta_3 TREATMENT_i * POST_t + (calendar\ time\ effects) + \varepsilon_{it}$$

where POST indicates time after individual i was randomized. CNO effects were inferred from the estimated value of β_3 and its standard error. Effects and significance levels were comparable to those yielded by the simple t-tests described above.

Appendix 5.B: CNO Services and total Medicare Outlays by Site

Appendix Table 5.1a

CNO-Covered Services Received per Beneficiary per Month from CNO and FFS Providers: Treatment and Control Groups: Carondolet (AZ)

	Control *(n=846)*	Treatment *(n=1,691)*		
		Total	**CNO**	**FFS**
Skilled nursing home visits	0.095	0.128	0.053	0.07s
Physical therapy home visits	0.048	0.049	0.03 1	0.018
Speech therapy home visits	0.006	0.006	0.006	0.000
Occupational therapy home visits	0.017	0.012	0.005	0.007
Medical social worker home visits	0.003	0.001	0.000	0.001
Home health aide visits	0.095	0.067	0.049	0.018
Ambulance davs	0.017	0.014	0.001	0.013

Source: **Abt Associates analysis of National Claims History and CNO utilization files.**

Appendix Table 5.1b

CNO-Covered Services Received per Beneficiary per Month from CNO and FFS Providers: Treatment and Control Groups: Carle Clinic (IL)

	Control *(n=794)*	Treatment *(n=1,671)*		
		Total	CNO	**FFS**
Skilled nursing home visits	0.097	0.105	0.086	0.019
Physical therapy home visits	0.026	0.018	0.013	0.005
Speech therapy home visits	0.009	0.001	0.001	0.000
Occupational therapy home visits	0.009	0.006	0.004	0.002
Medical social worker home visits	0.003	0.001	0.000	0.001
Home health aide visits	0.052	0.036	0.020	0.016
Ambulance davs	0.008	0.012	0.006	0.006

Source: **Abt Associates' analysis of National Claims History and CNO utilization files**

Appendix Table 5.1c

CNO-Covered Services Received per Beneficiary per Month from CNO and FFS Providers: Treatment and Control Groups: LAH (MN)

	Control *(n=769)*	Treatment *(n=1,565)*		
		Total	CNO	FFS
Skilled nursing home visits	0.066	0.052	0.037	0.015
Physical therapy home visits	0.027	0.059	0.015	0.0044
Speech therapy home visits	0.000	0.000	0.000	0.000
Occupational therapy home visits	0.007	0.004	0.003	0.001
Medical social worker home visits	0.002	0.001	0.000	0.001
Home health aide visits	0.062	0.023	0.013	0.010
Ambulance days	0.002	0.007	0.005	0.002

Source: Abt Associates' analysis of National Claims History and CNO utilization files.

Appendix Table 5.1d

CNO-Covered Services Received per Beneficiary per Month from CNO and FFS Providers: Treatment and Control Groups: VNSNY (NY)

	Control *(n=527)*	Treatment *(n=1,075)*		
		Total	CNO	FFS
Skilled nursing home visits	0.275	0.151	0.073	0.078
Physical therapy home visits	0.116	0.081	0.052	0.029
Speech therapy home visits	0013	0.003	0.001	0.002
Occupational therapy home visits	0.016	0.004	0.003	0.001
Medical social worker home visits	0.008	0.007	0.005	0.002
Home health aide visits	0.490	0.321	0.172	0.149
Ambulance davs	0 016	0.021	0.001	0.020

Source: Abt Associates' analysis of National Claims History and CNO utilization tiles

Appendix Table 5.5a

Mean Medicare Outlay per Month for Four Categories of Care: Treatment and Control: Carondolet (AZ)

	Treatment	Control	Difference
Part A: Outside CNO Service package	$183.19	$305.97	
Part B: Outside CNO service package	108.96	131.00	
Total outlays for non-CNO services	292.15	436.97	-$144.82
Part A: In CNO service package	10.61	19.36	
Part B: In CNO service package	6.67	14.07	
CNO capitation payment	80.39	-----	
Total outlays fur CNO-covered services	97.67	38.43	$59.24
Total Medicare outlay	$389.82	$470.40	-$80.58

Source: Abt Associates Inc. analysis of CNO payment records and Medicare National Claims History Files.
Note: In pre-randomization period, mean Medicare monthly outlay was $299.42 for the control group and $289.57 for the treatment group.

Appendix Table 5.5b

Mean Medicare Outlay per Month for Four Categories of Care: Treatment and Control: Carle Clinic (IL)

	Treatment	Control	Difference
Part A: Outside CNO Service package	$157.35	$156.26	
Part B: Outside CNO service package	79.86	79.59	
Total outlays for non-CNO services	237.23	235.85	$1.37
Part A: In CNO service package	3.43	14 43	
Part B: In CNO service package	5.26	9.13	
CNO capitation payment	43.13	-----	
Total outlays for CNO-covered services	51.82	23.56	$28.26
Total Medicare outlay	$289.04	$259.41	$29.63

Source: Abt Associates Inc. analysis of CNO payment records and Medicare National Claims History Files.
Note: In pre-randomization period, mean Medicare monthly outlay was $14 1.80 for the control group and $158.20 for the treatment group.

Appendix Table 5.5c

Mean Medicare Outlay per Month for Four Categories of Care: Treatment and Control: LAH (MN)

	Treatment	Control	Difference
Part A: Outside CNO Service package	$141.29	$141.09	
Part B: Outside CNO service package	50.17	48.39	
Total outlays for non-CNO ***services***	191.46	189.48	$1 98
Part A: In CNO service package	2.32	12.78	
Part B: In CNO service package	3.55	4.39	
CNO capitation payment	32.75	-----	
Total outlays for CNO-covered services	38.62	17.17	$21 45
Total Medicare outlay	$230.08	$206.65	$23.43

Source: Abt Associates Inc. analysis of CNO payment records and Medicare National Claims History Files.
Note: In pre-randomization period, mean Medicare monthly outlay was $180.13 for the control group and $15 1.97 for the treatment group.

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Appendix Table 5.5d

Mean Medicare Outlay per Month for Four Categories of Care: Treatment and Control: VNSNY (NY)

	Treatment	Control	Difference
Part A: Outside CNO Service package	$421.71	$305.22	
Part B: Outside CNO service package	172.30	162.18	
Total outlays for non-CNO services	594.01	467.40	$126.61
Part A: In CNO service package	2 1.48	70.96	
Part B: In CNO service package	11.77	11.07	
CNO capitation payment	110.94	-----	
Total outlays for CNO-covered services	144.19	82.03	$62.16
Total Medicare outlay	$738.20	$549.43	$188.77

Source: Abt Associates Inc. analysis of CNO payment records and Medicare National Claims History Files.
Note: In pre-randomization period, mean Medicare monthly outlay was $328.13 for the control group and $376.96 for the treatment group

6.0 NURSE ACTIVITY AND CLINICAL PRACTICE IN THE CNO

6.1 CNO Time Data

To better understand the operations and nature of the CNO intervention, time associated with CNO activities was recorded at each site. However, there are several issues that must be addressed before the time data can be interpreted. Issues pertain to the method of recording time and the differences in type of enrollee and operations at each site. Each site has developed different mechanisms and categories for coding time.

Issues in Recording of Time

Each site developed its own method of recording time to complement its operations. Therefore there were not consistent, clearly defined time collection categories across sites. In fact, within sites there were often inconsistencies in the coding of activities by practitioners. Maintaining accurate time records from practitioners is always difficult. As opposed to clinical data, time data has no direct relationship to the provision of care for the practitioner so recording of time is often viewed as a meaningless exercise. Follow up and examination of coding errors varied with each site. For example, documentation time was often incorporated into visit time when a separate category was allotted (for VNS this would be appropriate since documentation is computerized). Assessment and reassessment visits not specifically coded and rolled into other visits. Patient ID numbers were not always present with time in patient care activity. Because of these coding errors time in patient care is not always captured.

A crosswalk was developed for use in time analysis, however, several key areas of time were found not to be recorded at some sites. Meetings have been held, or are currently being held with the data coordinator, as well as, others at each site to determine what data can feasibly be collected consistently across sites and to assist in the improvement of the reliability of the time data. Key categories of time needed for analysis are time spent in home visits meeting Medicare criteria, as well as other home visits, time in baseline assessment (which may not be available at this point in the study), documentation, contact with other providers, phone contact with clients, client visits not in home, and time in group activities.

Enrollee and Operation Difference

As discussed in previous sections of this report, the sites have some significant differences in the way they operate and the mix of enrollees. These differences are reflected in the time data. Comparing PNP time to enrollee is deceptive, especially since sites have enrolled clients at different rates and have different numbers of clients in the higher rate cells. Tables 6.1 to 6.4 show the relationship between PNP time per enrollee and site payment over the first 18 months of the demonstration project. Carle enrolled clients more rapidly into its

program so that the ratio of PNP time to enrollee and payment is lower. LAH was higher in both minutes per enrollee and minutes per site payment due to a slower enrollment process. While all sites have more than 92% of their clients in the A rate cell, Carondelet and VNSNY have larger numbers in the higher rate cells, especially rate cell D (Table 6.5). Because of this, one would expect a larger amount of time per enrollee at these sites.

Another potential missing item in the time data is the time in patient care from contract services. While VNSNY provides all of the nursing home visits for its clients, the other sites contract out for some of the nursing visits. Because of this, comparing PNP time is not always comparing the same services. In the following section, specific areas of PNP time will be examined. Time will be analyzed by monthly mean in three 6-month intervals to allow for the changes in site efficiency and practice related to enrollment demands and operation setup.

Several factors influenced the use of PNP time in this project. The baseline assessment and the 6-month reassessment are activities that require a large portion of PNP time and are predictable since baseline assessment occurs at the beginning of care and reassessment occurs at 6-month intervals. The reassessment time was used to conduct health promotion, monitoring, and other CNO activities in addition to data collection for the project. Due to the large proportion of "healthy" enrollees, the reassessment visit may represent the only PNP time allotted to the enrollee every six months. Therefore, it would be expected that time allotted per enrollee would be related to the length of enrollment in the CNO. Another major factor affecting PNP time would be the numbers enrolled and the efficiency of the enrollment and reassessment process. It was anticipated that greater efficiency would occur as each site gained experience in the CNO operation. To allow for the influence of these factors, PNP time was examined at six-month intervals. In addition, enrollees were grouped into three categories based on length of enrollment (less than 6 months, 6 to 12 months, greater than 12 months).

Baseline Assessment

Data on baseline assessment was not available at all sites. In the baseline assessment, several sites established the enrollees plan of care. This was not consistent across sites, with several contracting out of the agency for individuals to collect the initial assessment data. Because of this, initial assessment time was not included in aggregate time analysis. Table 6.6 shows the average number of minutes per baseline assessment while Table 6.7 portrays the average minutes by rate cell. It is interesting to note that two sites, LAH and Carle, have decreased the time needed for initial assessment as the study has progressed. Carle has concentrated on streamlining documentation during the assessment process, Carondelet has developed cues in the assessment to alert nurses to further investigate potential problems identified while completing the Abt questionnaire, VNS has

Table 6.1

Carle PNP Time Per Enrollee and Site Payment

Month	PNP Minutes	Number Enrolled	Minutes/ Enrollee	Site Payment	Minutes/ Site Payment
January 94	38790	0	na	0	na
February 94	43128	274	157	8983	4.80
March 94	55350	424	131	18993	2.91
April 94	47205	579	82	25513	1.85
May 94	54765	797	69	32788	1.67
June 94	62535	954	66	46830	1.34
July 94	43455	1077	40	51672	0.84
August 94	69225	1192	58	55438	1.25
September 94	53205	1281	42	55015	0.97
October 94	61938	1330	47	62777	0.99
November 94	77061	1427	54	68554	1.12
December 94	65295	1470	44	65703	0.99
January 95	75243	1563	48	73961	1.02
February 95	67695	1576	43	66994	1.01
March 95	88665	1591	56	78122	1.13
April 95	72285	1637	44	72550	1.00
May 95	82230	1725	48	70614	1.16
June 95	67455	1763	38	76029	0.89
Total	1125525	20660	54	930536	1.21

Table 6.2

Carondelet PNP Time Per Enrollee and Site Payment

Month	PNP Minutes	Number Enrolled	Minutes/ Enrollee	Site Payment	Minutes/ Site Payment
January 94	0	0	na	na	
February 94	23301	25	932	235	30.43
March 94	43880	62	708	1139	12.76
April 94	53055	116	457	3181	9.32
May 94	58349	159	367	6576	7.39
June 94	76613	281	273	10331	4.27
July 94	73890	373	198	12084	2.69
August 94	93492	473	198	13532	2.26
September 94	96785	604	160	15217	1.77
October 94	96786	711	136	23888	1.60
November 94	116988	824	142	30907	1.80
December 94	130644	1048	125	36193	1.73
January 95	168535	1300	130	45556	1.76
February 95	145355	1601	91	49756	1.13
March 95	161930	1600	101	53903	1.47
April 95	155978	1782	88	55073	1.26
May 95	154826	1878	82	60026	1.22
June 95	102229	1880	54	66535	0.84
Total	1752636	14717	119	$484132	1.64

Table 6.3

LAH PNP Time Per Enrollee and Site Payment

Month	PNP Minutes	Number Enrolled	Minutes/ Enrollee	Site Payment	Minutes/ Site Payment
January 94	17810	**0**	na	**0**	na
February 94	17150	9	1906	235	72.87
March 94	26435	38	696	1139	23.21
April 94	35025	105	334	3181	11.01
May 94	42015	207	203	6576	6.39
June 94	44560	311	143	10331	4.3 1
July 94	55785	381	146	12084	4.62
August 94	60229	425	142	13532	4.45
September 94	69855	482	145	15217	4.59
October 94	71245	610	117	23888	2.98
November 94	91192	737	124	30907	2.95
December 94	95205	860	111	36193	2.63
January 95	100695	991	102	45556	2.21
February 95	77447	1138	68	49756	1.56
March 95	94967	1249	76	53903	1.76
April 95	104705	1355	77	55073	1.90
May 95	115886	1471	79	60026	1.93
June 95	101650	1577	64	66535	1.53
Total	1221856	11946	102	484132	2.52

Table 6.4

VNSNY PNP Time Per Enrollee and Site Payment

Month	PNP Minutes	Number Enrolled	Minutes/ Enrollee	Site Payment	Minutes/ Site Payment
January 94	**0**	**0**	na	**0**	na
February 94	1910	8	239	1479	7.46
March 94	28490	24	1187	3725	5.65
April 94	29380	76	387	6593	4.02
May 94	33390	191	175	12838	3.14
June 94	54580	280	195	21128	2.48
July 94	46540	401	116	39698	1.68
August 94	57725	517	112	63387	1.62
September 94	50676	617	82	6797 1	1.40
October 94	47010	698	67	79281	1.22
November 94	66520	790	84	87176	1.40
December 94	67025	904	74	98355	1.30
January 95	72115	1020	71	124340	1.23
February 95	70370	1028	68	119311	0.99
March 95	64770	1044	62	130255	1.10
April 95	60495	1058	57	137630	1.01
May 95	65735	1066	62	152282	1.02
June 95	58470	1070	55	147057	0.80
Total	87520 1	10792	81	1292506	1.32

Table 6.5

Distribution of Enrollees by Site and Rate Cell Over Time

Site	rate cell A (% of total)	rate cell B (% of total)	rate cell C (% of total)	rate cell D (% of total)	total
Carle					
Jan94-Jun94	1046 (96)	20 (2)	8 (1)	16 (1)	1090
July94-Dec94	1558 (96)	26 (2)	14 (1)	22 (1)	1620
Jan95-Jun95	1729 (97)	26 (1)	13 (1)	18 (1)	1786
Carondelet					
Jan94-Jun94	379 (95)	5 (1)	4 (1)	13 (3)	401
July94-Dec94	1182 (92)	29 (2)	28 (2)	42 (3)	1281
Jan95-Jun95	1916 (93)	42 (2)	34 (2)	55 (3)	2047
LAH					
Jan94-Jun94	369 (98)	2 (1)	5 (1)	1 (1)	377
July94-Dec94	1401 (98)	10 (1)	16 (1)	5 (1)	1432
Jan95-Jun95	1574 (98)	10 (1)	15 (1)	6 (1)	1605
VNSNY					
Jan94-Jun94	382 (94)	4 (1)	6 (2)	12 (3)	404
July94-Dec94	979 (93)	13 (1)	15 (2)	39 (4)	1053
Jan95-Jun95	992 (93)	12 (1)	17 (2)	47 (4)	1068

Table 6.6

Average PNP Minutes Per Baseline Assessment by Site

	Group 1	Group 2	Group 3
Site	Jan-Jun 94	Jul-Dec94	Jan-Jun95
Carle	147.4	91.7	83.7
C arondelet	*	*	*
LAH	152.9	142.3	132.6
VNSNY	115.0	121.1	116.9

* time not recorded in this category

Table 6.7

Average PNP Minutes Per Baseline Assessment by Rate Cell

	Group 1	Group 2	Group 3
Rate Cell	Jan-Jun 94	Jul-Dec94	Jan-Jun95
A	137.1	150.3	182.2
B	127.2	184.9	215.5
C	159.6	216.7	181.3
D	195.1	181.3	221.1

the lowest time in the baseline assessment. This could be related to the use of the computer at the point of care. The average assessment time appears to correlate with rate cells during the first 6 months but is not for the second and third intervals. Those individuals in the higher rate cells may not require as long of assessment visit if the nurse expects to return soon, versus those in the lower cells that may not receive a visit or contact for several months.

Reassessment

As part of the case management service, sites conduct a six-month reassessment of every enrollee. This category was not consistently recorded at all sites, in fact, at sites with this category nurses often coded their time as home or office visit instead. Table 6.8 shows average monthly time for reassessment based on six-month intervals while Table 6.9 shows a breakdown by payment cell. The time in reassessment does not appear to increase with rate cell. This is probably similar to baseline assessment in that these patients are seen more frequently requiring less time at reassessment.

Table 6.8

Reassessment Average Monthly Minutes by 6-Month Period

	Group 1			Group 2		Group 3
Site	Jan-Jun94	Jul-Dec94	Jan- Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
Carle		11.8	23.2	9.9	26.2	12.4
Carondelet	*	*	*	*	*	*
LAH	16.9	13.7	32.6	14.7	32.1	13.6
VNSNY	6.8	10.5	26.4	12.7	20.6	0
All Sites	11.1	12.3	25.7	14.2	27.0	13.4

* time not recorded in this category

Table 6.9

Reassessment Average Monthly Minutes by 6-Month Period

	Group 1			Group 2		Group 3
Rate Cell	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
A	0.4	3.8	17.38	0.11	15.1	0.4
B		3.1	22.3	0.0	10.9	0.6
C		5.0	17.0	0.3	8.0	0.0
D		5.6	16.5	0.2	10.4	0.0

Documentation

The time spent in documentation per enrollee is difficult to capture. PNPs frequently document on several enrollees at the same time so assignment of time to specific enrollees is difficult. In addition, documentation time is often rolled into visit time or recorded without an enrollee identifier. However. the PNPs were able to document a large portion of their documentation time which gives a picture of the amount of time spent in activities other that direct patient care. VNSNY uses computers at the point of care so that documentation time is rolled into the encounter. Tables 6.10 to 6.12 represent documentation time by site, rate cell, and total PNP minutes spent in documentation. Documentation time appears not to be strongly related to rate cell. Documentation time increased in 3 sites during the last 6-month interval. The largest amount of PNP time applied to documentation is at Carle, however, this may be due to a better system for capturing time in documentation.

Home Visits

Tune in home visits is influenced by several factors. First and foremost is the number of high rate cell enrollees. As expected, VNSNY and Carondelet are higher in the time in home visits Table 6.13. However, LAH is higher that expected with the small number of enrollees in the higher rate cells. In addition, Carondelet does not capture the time of its contract home visits so time in home visits may actually be higher. Some reassessment time maybe coded as home visits at some sites. Rate cell C does not seem to have higher usage than cell B, however the numbers are too low at this time in these cells to draw conclusions. This will be further explored in the final report.

Office Visits

The office visit category includes encounters with enrollees at community center, clinics, and neighborhood sites. Depending on the site, office time may include reassessment time. One surprising finding was the low number of minutes in this category from LAH since they have neighborhood sites that are frequently attended by enrollees (Table 6.15). Since the Fall of 1995 PNPs have begun to more accurately record time associated with clinic visits. It is expected that time associated with this category will increase. As shown in Table 6.16 time associated with rate cell varied with each 6-month interval.

Table 6.10

Documentation Average Monthly Minutes by 6-Month Period

	Group 1		Group 2			Group 3
Site	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
Carle	10.8	12.7	17.1	13.0	18.8	14.8
Carondelet	11.1	10.4	19.9	10.1	19.9	10.0
LAH	8.8	7.3	9.3	6.0	10.4	11.4
VNSNY	4.1	0	0	0	0	0
All Sites	10.7	11.9	17.1	10.4	18.1	10.4

Table 6.11

Documentation Total PNP Minutes Per 6-Month Interval

Site	Jan-Jun94	Jul-Dec94	Jan-Jun95	Total	% of total PNP time
Carle	24330	114660	109455	248445	22%
Carondelet	12109	43668	96708	152485	9%
LAH	9010	41537	101791	152338	12%
VNSNY	12340	28560	69060	109960	13%
All sites	57789	228425	377014	663228	13%

Table 6.12

Documentation Average Monthly Minutes by 6-Month Period

	Group 1			Group 2		Group 3
Rate Cell	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
A	3.7	7.2	8.7	5.1	7.3	6.8
B	12.4	10.2	18.5	9.3	15.7	10.2
C	9.5	11.4	7.0	9.5	8.6	8.3
D	26.5	15.6	15.6	6.6	7.9	9.5

Table 6.13

Home Visits Average Monthly Minutes by 6-Month Period

Site	Group 1			Group 2		Group 3
	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
Carle	14.9	16.8	20.8	14.8	26.4	11.4
Carondelet	34.5	34.2	48.9	28.1	37.3	28.6
LA9	32.8	48.7	69.0	28.8	64.6	32.6
VNSNY	25.3	35.7	58.9	32.2	82.7	46. I
All Sites	27.3	30.2	11.2	28.7	52.7	30.3

Table 6.14

Home Visits Average Monthly Minutes by 6-Month Period

Rate Cell	Group 1			Group 2		Group 3
	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan- Jun95	Jan-Jun95
A	2.8	3.9	3.5	4.1	5.2	3.1
B	10.7	13.9	12 4	18.1	12.7	16.4
C	17.1	25.3	12.2	14.4	16.5	14.3
D	24.8	39.2	37.7	22.7	25.6	261

Table 6.15

Office Visit (not in home) Average Monthly Minutes by 6-Month Period

	Group 1			Group 2		Group 3
Site	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
Carle	8.1	10.1	7.0	9.3	8.9	10.1
Carondelet	14.2	14.2	30.2	14.5	29.1	14.9
LAH	5.1	6.1	7.3	4.5	5.3	8.1
VNSNY	12.1	17.0	30.1	15.1	21.5	18.6
All Sites	12.5	11.5	25.4	13.3	24.4	14.9

Table 6.16

Office Visit (not in home) Average Monthly Minutes by 6-Month Period

	Group 1			Group 2		Group 3
Rate Cell	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
A	2.2	5.2	3.1	3.7	4.9	4.5
B	1.0	3.7	0.0	5.1	8.3	3.4
C	1.3	4.5	2.1	5.8	4.2	4.7
	2.8	3.3				

Patient/Provider Contact

Patient/Provider contact includes all phone calls to enrollees, phone and face to face contacts with other providers. This appears to be a consistent component of care across sites (Table 6.17) It is hoped with the final report this category can be further broken down to separate enrollee from provider contacts. The amount of time in this category appears to increase with rate cell. however the difference between rate cell B **and C** is not as obvious (Table 6.18).

Direct Care

A traditional measure of health care usage is the amount of tune in direct care or face to face contact with the health care professional. To examine this concept, time spent in reassessment, office and home visits was examined. Care provided on initial assessment will not be included since it was not captured across sites. Carle appears to be lowest in direct care hours while VNSNY is highest (Table 6.19). With the difference in case mix,

Table 6.17

Patient/Provider Contact Average Monthly Minutes by 6-Month Period

	Group 1			Group 2		Group 3
Site	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
Carle	14.4	14.0	21.0	10.7	21.8	12.9
Carondelet	18.5	15.8	27.6	12.7	14.9	10.5
LAH	11.2	13.0	16.9	9.6	16.2	12.3
VNSNY	14.5	9.3	23.9	12.9	19.4	15.4
All Sites	15.4	13.8	22.2	11.7	17.6	11.3

Table 6.18

Patient/Provider Contact Average Monthly Minutes by 6-Month Period

	Group 1			Group 2		Group 3
Rate Cell	Jan-Jun94	Jul-De84	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
A	5.8	5.5	6.4	5.0	4.3	3.7
B	20.8	7.4	26.7	7.6	13.5	8.8
C	22.3	16.3	5.1	8.9	7.0	9.1
D	39.4	18.8	23.4	13.3	10.3	12.1

Table 6.19

Direct Care Average Monthly Minutes by 6-Month Period
(reassessment + home visit + office visit)

	Group 1			Group 2		Group 3
Site	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
Carle	23.0	38.7	51.0	34.0	61.5	33.9
Carondelet	48.7	48.4	79.1	42.6	66.4	43.5
LAH	54.8	68.5	108.9	48.0	102.0	54.3
VNSNY	44.2	63.2	115.4	60.0	124.8	64.7
All Sites	50.9	54.0	62.3	56.2	104.1	58.6

site location, and use of contract visits this is not surprising. As shown in Table 6.20 there is a large difference in direct care hours between Rate Cell A and D, however Rate Cells B and C show little difference.

Table 6.20

Direct Care Average Monthly Minutes by 6-Month Period
(reassessment + home visit + office visit)

	Group 1			Group 2		Group 3
Rate Cell	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
A	5.0	12.9	24.0	7.9	25.2	7.64
B	11.7	20.7	34.7	23.2	31.9	20.4
C	18.4	34.8	313	20.5	28.7	19.0
D	27.6	48.1	56.3	24.4	37.6	31.2

Indirect Care

Indirect care is difficult to capture and often a critical consumer of PNP time. For this analysis, indirect care was calculated by adding documentation and patient/provider time. VNSNY was found to be lowest in indirect time (Table 6.2 1). This is partially due to the lack of time allotted to documentation. Indirect time does not appear to be related to rate cell (Table 6.22).

Table 6.21

Indirect Care Average Monthly Minutes by 6-Month Period
(documentation + patient/provider contact)

	Group 1			Group 2		Group 3
Site	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
Carle	25.2	26.7	38.1	23.7	40.6	27.7
Carondelet	29.6	26.2	47.5	22.8	34.8	20.5
LAH	20.0	20.3	26.2	15.6	26.6	23.7
VNSNY	18.6	9.3	23.9	12.9	19.4	15.4
All Sites	26.1	25.7	39.3	22.1	35.7	21.7

Table 6.22

Indirect Care Average Monthly Minutes by 6-Month Period (documentation + patient/provider contact)

	Group 1			Group2		Group 3
Rate Cell	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
A	9.5	12.7	15.1	10.1	11.6	10.5
B	33.2	17.6	45.2	16.9	29.2	19.0
C	31.8	27.7	12.1	18.4	15.6	17.4
D	66.8	34.4	39.0	19.9	18.2	21.6

Total Time

Total time was presented earlier in this chapter. As shown in Tables 6.23 and 6.24 total time here reflects total PNP time spent in patient specific activities (time **that** is recorded with an enrollee ID). Carle appears to be lower in time allocated per enrollee while VNSNY appears to be highest. In the final report greater scrutiny will be applied to the factors contributing to PNP time and resource use by client. The time data used in this analysis had several inconsistencies that will be corrected before the final report. In addition, it is hoped that the second and third year will provide more data descriptive of patient care since activities since enrollment will not be consuming the largest amount of PNP time.

Table 6.23

Total Patient-Specific Time (Direct + Indirect)

	Group 1			Group 2		Group 3
Site	Jan-Jun94	Jul-Dec94	Jan-Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
Carle	48.2	65.4	89.1	57.7	102.1	61.6
Carondelet	78.3	74.6	126.6	65.4	101.2	64.0
LAH	74.8	88.8	135.1	63.6	128.6	78.0
VNSNY	62.8	72.5	139.3	72.9	144.2	80.1
All Sites	77.0	79.7	101.6	78.3	139.8	80.3

Table 6.24

Total Patient-Specific Time (Direct + Indirect)

	Group 1			Group 2		Group 3
Rate Cell	Jan-Jun94	Jul-Dec94	Jan- Jun95	Jul-Dec94	Jan-Jun95	Jan-Jun95
A	14.5	25.6	39.1	18.01	36.8	18.1
B	44.9	38.3	79.9	40.1	61.1	39.4
C	50.2	62.5	43.4	38.9	44.3	36.4
D	93.9	82.5	95.3	44.3	55.8	52.8

Future Analysis

From the early time data it appears that the sites spent most of their first year enrolling and streamlining operations. In the second year of the project, especially after second quarter 1995, enrollments seem to have stabilized, so that a more accurate picture of the time spent in CNO care delivery can be examined. With improved collection of time data, the relationship between nurse time and the payment cells will be tested, but also the relationship between other factors such as Omaha problems and resource use in both PNP time and health care dollars will be examined. It is critical that as much time as possible be traced back to the specific client it was related to, as well as, a tracking of the time allotted to general administrative areas in providing patient care.

6.2 Clinical Practice

Following the December 1994 advisory panel meeting it was recommended that additional data be collected to describe nursing case management at each site. The charge was to examine the clinical record to identify what data elements could be collected to enrich the current data being collected. There also was a concern regarding conducting the Omaha assessment on the control group. The advisory panel contended that the Omaha assessment was an intervention and contaminated the control group, especially since the majority of CNO clients were not receiving home health care visits.

The CNO demonstration is testing new innovative methods of delivering health care to the Medicare population in four sites that are different not only in geographic area but also in the delivery of the case management intervention. The diversity of sites has been an asset as well a liability in the evaluation process. As an asset, the diversity has enabled the project to test nursing case management through different settings, populations, and provider activities. The liability has been the lack of standardization in the case management intervention as well as variance in the client population at each site.

The effectiveness of the CNO intervention may vary by site due to multiple factors. The evaluation design has included collection of data related to health status, age, and use of services as well as a qualitative

analysis of nurse decision making. However, collection of clinical record data related to the CNO intervention has been limited. Enhancement of the collection of the clinical record data provides data to assist in the evaluation of the CNO intervention by providing additional data for description of the client population, description of the case management intervention, differences among sites, and potential factors that predict health care service use. For example, nursing diagnoses (Omaha problems) and interventions were found to be significant predictors of utilization of home care services (Pasquale, 1987; Ballard & McNamara. 1983; Hays, 1992; Helberg, 1994; Marek, in press).

The need for quality ambulatory care record data has increased with the shift of care from the inpatient hospital setting. Acknowledged weaknesses of this type of data include the lack of standardization in content and format, inaccessibility, incompleteness, and inaccuracies (Grady & Schwartz, 1993). Several standardized frameworks for recording nursing clinical data have been developed for use in nursing documentation. The CNO sites chose the Omaha System for labeling of client problems and outcomes, and the Easley/Storfjell intervention categories for intervention labeling. However, there has not been a consistent approach across the sites in the use of the standardized systems. Recording of clinical nursing data is a complex process. Nurses care for multiple problems at one time and provide multiple interventions with each patient encounter. Implementation of a standardized documentation system is a developmental process. The sites have had a year to set up their operations, enroll patients and streamline the documentation process. However, the sites have acknowledged that at this point in the project it is not possible to collect standardized data across sites but comparable areas can be developed through standardization of some items and crosswalking as necessary.

To identify areas ofcomparable data the clinical record data at each site were examined for the elements of the Nursing Minimum Data Set (NMDS). On March 20, 1995 a meeting was held with the site directors to discuss potential common clinical record data elements (Table 6.25). It was discovered that although each site was collecting the nursing care elements of the NMDS, the data collected related to each element was not comparable. Following the March meeting site visits were made to review client records, meet with CNO nursing staff and observe documentation of client

Table 6.25

Nursing Minimum Data Set Nursing Care Items	Carle	Carondelet	LAH	VNS
Nursing Diagnosis	Omaha	Omaha	Omaha	Gordan (cross walks to Omaha)
modifiers	Actual Pending Managed Health Promotion	Actual Potential Health Promotion	Actual Pending Potential Managed Health Promotion	No modifiers
Nursing Intervention	Easley-Storfjell 5 categories Narrative note	Omaha with targets (crosswalk to Easley-Storfjell 5 categories) Narrative note	Easley-Storfjcll 5 categories Narrative note	Easley-Storfjell 5 categories Narrative note
Nursing Outcome	All problems rated for knowledge, behavior and status. Resolved modifier	Actual priority problems rated for knowledge, behavior and status. Resolved modifier	Actual priority problems rated for knowledge, behavior and status. Resolved modifier	Ail problems rated for knowledge, behavior and status. Resolved modifier
Intensity	Hours and staff mix	Hours and staff mix	Hours and staff mix	Hours and staff mix Easley-Storfjell (complexity)

Nursing Diagnosis

A nursing diagnosis is a clinical judgement about an individual, family, or community response to actual or potential health problems, Nursing diagnoses provide the basis for selection of nursing interventions aimed at achieving outcomes for which the nurse is accountable (NANDA, 1990). Therefore, data related to nursing diagnoses not only provide information related to the CNO client's health status, but provide information on the areas of health that nursing care is directed, Three sites agreed on using the Omaha System Problem Classification Scheme to represent nursing diagnosis, however, VNS having already invested in a different classification system for nursing diagnosis, used a crosswalk to the Omaha System.

In addition to the use of the same classification system for naming nursing diagnoses, each site uses a different set of modifiers for the nursing diagnoses. For example, two sites use potential to describe diagnoses where the client is at risk for problems but no signs and symptoms are present. Carle and LAH use a modifier called managed to designate nursing diagnoses when the client has existing signs and symptoms but is "managing" the problem adequately. The main intervention for this type of problem is monitoring the client's self care ability. A crosswalk of modifiers was developed so that nursing diagnoses could more readily be compared (Table 6.26).

Table 6.26

Omaha Problem Modifier Crosswalk

	VNS	Carondelet	Carle	LAH/BNP
Problem Modifier(s) Collected		Actual	Active	Active
		Potential		Potential
		Health Promotion	Health Promotion	Health Promotion
			Pending	Pending
			Managed	Managed
	Resolved	Resolved	Resolved	Resolved

Another area of difference in the data related to nursing diagnoses was the method of reporting to Abt. Each site was required to report and rate actual priority Omaha problems to Abt on only 20% of its treatment group to compare to the Omaha problems collected on 20% of the controls. Sites were not consistent in the problems reported. VNS reported all problems while Carondelet reported only actual problems that it had designated as priority (Table 6.27). Since only active or actual problems were reported at three sites a total of 42% of the client's enrolled had no Omaha problems reported. Clients with Omaha problems only in the health promotion or managed areas did not have problems reported to Abt. Without data on all problems a large portion

of the focus of the CNO intervention is missing. Problems related to health promotion or potential problems are not reported as well as the managed category used at Carle and LAH. Since a major portion of the CNO intervention relates to health promotion and monitoring, these categories of diagnoses are essential clinical data. In addition, reporting Omaha problems on all treatment group members rather than just 20% yields a greater pool of data for analysis.

Table 6.27

Omaha Problems Reported to Abt

VNS	Carondelet	Carle	LAH/BNP
All	Actual Problems that are coded priority	Active	Actual Problems that are coded priority

To better understand the missing problems Carle was able to provide data on the diagnoses that were currently not reported to Abt. The mean number of nursing diagnoses for 1992 CNO enrollees was 10.88 with a mean of only 1.56 problems with the active modifier (problems reported to Abt) (Table 6.28). Tables 6.29 to 6.33 present the top ten Omaha problems in each modifier category. The active and managed problems appear to be most similar with seven of the ten listed

Table 6.28

Omaha Problems By Modifier-Carle

Modifier	Mean # Problems	Range
Active	1.56	O-17
Health Promotion	0.52	o-5
Pending	1.15	O-15
Managed	7.00	o-22
Resolved	0.66	o-7

Table 6.29

Active Omaha Problems-Carle

Problem	#	%
Pain	316	16
Neuro-musculo-skeletal function	306	15
Circulation	201	10
Genito-urinary function	195	10
Nutrition	185	9
Integument	170	9
Respiration	158	8
Vision	155	8
Sleep and Rest Patterns	121	6
Emotional Stability	109	5

Table 6.30

Health Promotion Omaha Problems-Carle

Problem	#	%
Health Care Supervision	518	26
Prescribed Medication Regimen	183	9
Physical Activity	107	5
Residence	69	3
Nutrition	39	2
Genito-Urinary Function	20	1
Vision	10	1
Hearing	9	1
Circulation	9	1
Income	8	1

Table 6.31

Managed Omaha Problems-Carle

Problem	#	%
Vision	1749	88
Circulation	1239	62
Neuro-musculo-skeletal function	1101	55
Dentition	1054	53
Pam	1002	50
Nutrition	788	40
Genito-urinary function	756	38
Integument	699	35
Hearing	620	31
Digestion/Hydration	597	30

Table 6.32

Pending Omaha Problems-Carle

Problem	#	%
Physical Activity	333	17
Health Care Supervision	313	16
Hearing	223	11
Nutrition	178	9
Substance Abuse	150	8
Human Sexuality	82	4
Emotional Stability	80	4
Genito-urinary function	52	3
Sleep and rest patterns	51	3
Respiration	50	3

Table 6.33

Resolved Omaha Problems-Carle

Problem	#	%
Grief	103	5
Integument	91	5
Sleep and Rest patterns	91	5
Health Care Supervision	82	4
Pain	72	4
Genito-urinary function	63	3
Physical Activity	59	3
Digestion-Hydration	57	3
Bowel Function	51	3
Respiration	51	3

problems common to both groupings. One area that will be examined in the final report is the migration of problems from active to managed, or pending to active. It would appear that the problems in the managed category are common to the older population and monitoring such problems will become more common as the need for long-term care increases. It may not be possible to resolve all client problems, but movement from active to managed or maintenance of problems in the managed category can be viewed as a positive outcome. It also is worth noting the difference between the active and the health promotion problems. The focus of the health promotion problems are more health related behaviors such as physical activity and less focused on physiological problems identified in the active problems.

Sites were reporting Omaha problems at assessment, reassessment, with time and travel documentation, and service delivery/ utilization data. The PNPs and site directors felt this was repetitive and questioned the usefulness of the reporting Omaha data multiple times. In addition, PNPs were reporting only one to two problems with each encounter when recording time. They found it diffkult to identify which problems to select since multiple problems were usually addressed during a client encounter.

Tables 6.34 to 6.37 identify the top ten Omaha problems (actual/active/and or priority) identified in 20% of both treatment and controls on initial assessment. Pain, circulation, neuro-musculo-skeletal appear consistently in the top four problems. Nutrition, genito-urinary, and emotional stability are common problems in all four sites. Communication with community resources occurred only in the VNS top ten and was the most

frequent diagnosis. At VNS, this diagnosis is often used with health promotion activities. Since VNS does not use modifiers this problem would be reported, whereas at the other sites problems related to health promotion were not reported.

Table 6.34

Admission Omaha Problems-Carle
(n=876, 256 controY620 treatment)

Problem	#	%
Pain	91	10
Neuro-musculo-skeletal function	74	8
Health care supervision	56	6
Circulation	56	6
Sleep and rest	56	6
Nutrition	54	6
Physical Activity	54	6
Genito-urinary function	49	5
Vision	37	7
Integument	39	4

Table 6.35

Admission Omaha Problems-Carondelet
(n=1077, 351 control/726 treatment)

Problem	#	%
Nutrition	141	13
Neuro-musculo-skeletal function	114	11
Circulation	106	10
Pain	91	8
Physical Activity	85	8
Genito-urinary function	60	6
Emotional Stability	60	6
Sleep and rest	48	4
Respiration	36	3
Hearing	30	3

Table 6.36

Admission Omaha Problems-LAH
(n=345, 112 control/233 treatment)

Problem	#	%
Circulation	40	12
Neuro-musculo-skeletal Function	38	11
Pain	22	6
Vision	26	8
Nutrition	19	6
Hearing	16	5
Integument	15	4
Genito-urinary function	13	4
Respiration	10	3
Health Care Supervision	9	3
Emotional Stability	9	3

Table 6.37

Admission Omaha Problems-VNSNY
(n=644, 155 control/489 treatment)

Problem	#	%
Communication	147	23
Pain	66	10
Nutrition	54	8
Neuro-musculo-skeletal function	46	7
Prescribed Medication Regimen	41	6
Emotional Stability	31	5
Bowel Function	24	4
Health Care Supervision	24	4
Integument	22	4
Genito-urinary function	21	3

Following the site director meeting and site visits the following changes have been made to enhance the collection of nursing diagnosis data. Sites will now provide all Omaha problems with modifiers at assessment and six month reassessment. Omaha problems will be reported on 100% of the treatment group rather than 20% Omaha problems will no longer be recorded on the time sheet and service delivery/utilization data. With the enhanced data a more comprehensive picture of the focus of the CNO intervention will be available. Some of the areas to be examined include identification of differences among high and low risk groups, the relationship between type and number of problems and resource use, and the clustering of problems with different client groups.

Interventions

The sites chose to categorize nursing interventions by the five categories of the Easley/Storfjell instrument. The categories are physical care, psychosocial care, coordination, education, and assessment. Carondelet used the Omaha System Intervention Scheme and crosswalked to the Easley/Storfjell categories. One intervention category was recorded on the time sheet with each client encounter. The PNPs found this type of recording to be difficult since usually more than one type of intervention occurs with each client encounter.

Although the recording of interventions was felt to be important, the recording of only one category with each encounter was felt to reduce the complexity of the nursing encounter, Each site has developed unique and innovative interventions for their clients. At this point in time, the most effective way to describe the interventions at each site is through the qualitative analysis currently in progress. In addition, each site has its own data reflective of some of its specific programs, such as the volunteer coordination at the Minnesota site. The unique site data in combination with the qualitative data will provide a more comprehensive picture of the CNO interventions.

Outcomes

The Problem Rating Scale for Outcomes of the Omaha System was chosen to represent a nursing sensitive outcome measure for the CNO project. Originally, 20% of the controls were to have an Omaha outcome assessment conducted at yearly intervals to be compared to 20% of the treatment group. The advisory panel voiced opposition to using the Omaha assessment as an outcome measure since the assessment also can be viewed as an intervention. Because of this, Omaha assessments with outcome ratings were not conducted on the control group at the end of the first year of enrollment. The sites followed the same policy for rating problems as it did for reporting problems to Abt. Therefore, 42% of the study participants had no problems identified or could then be rated using the Problem Rating Scale for Outcomes. The sites have now agreed to rate all problems, with the exception of Carondelet which will rate only actual and health promotion. The rating of all problems will yield valuable descriptive data on the use of the rating scale as an outcome measure.

In the NMDS, nursing outcome is defined as the resolution of the nursing diagnosis. The rating of resolved, not resolved or referred for continuing care is a suggested outcome measure in the NMDS. All sites have agreed to report resolved problems at the 6 month reassessment time. In addition, the change in status of problems from active to managed will be examined as a potential outcome at sites using the managed modifier.

Intensity

In the NMDS intensity is calculated by hours of care and staff mix. The examples, however, are acute care oriented. Since time has been collected by provider, intensity will be addressed in the discussion of PNP time.

6.3 References

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7.0 SUMMARY OF THE PROCESS ANALYSIS OF CNO OPERATIONS

In the foregoing chapters we have discussed effects of the CNO on enrollees' health functionmg, and satisfaction, its effects on use of services and Medicare outlays, and the patterns of nursing and clinical practice in the CNO. All of these topics are related to the more descriptive discussions of the CNO sites that will appear in the Annual Report. The latter document will continue to develop the case studies of the individual sites that were started in last year's Annual Report and will elaborate CNO issues derived from cross-site analysis. The ideal is to integrate the contents of these two reports; that will be done in the Final Report, which will be produced after additional data have been collected and analyzed and after additional site visits have taken place during the last year of the demonstration.

The current reporting of outcome and process data in separate documents accommodates the original expectations for reports in this project. However, as the project has developed, interaction between outcome and process data has been critical in understanding the nature and dynamics of the CNO intervention. With encouragement from HCFA and the Technical Advisory Panel, we intent to further develop common themes that are addressed by both outcome and process data.

Below the four CNO sites will be briefly described to provide some context for the outcome data. A brief discussion follows of some issues that will be addressed in the Annual Report. These materials are presented with the caveat that the analysis is still on-going, and changes may be noted in the Annual Report.

Carle Clinic

Carle Clinic is a for-profit, private physician group practice with a large ambulatory nursing component. It is one of the largest, private physician group practices in the country and serves as the regional medical center for the primarily rural population residing in Central Illinois and Western Indiana. The Carle CNO operates 6 sub-sites, which serve predominately rural areas. The main sub-site offers CNO services exclusively; the others also have non-CNO Carle Clinic services.

For the CNO, Carle staff defined three risk categories among their enrollees: high, moderate and low. PNPs that attend to a high risk clientele have a client to nurse ratio of approximately 1: 150. The nurse to client ratio for PNPs with moderate/ low-risk clients is 1:250. Carle's nurses are assisted by Case Assistants, non-nurses who participate in administrative tasks, identification of community resources, and the monitoring of low-risk enrollees by telephone. The rural service delivery system coupled with the need for cost-efficiency has made developing and maintaining a bond with Carle's enrollees extremely challenging for the PNPs. Carle has tried to strengthen the attachment of low-risk enrollees to the CNO by providing health promotional and educational activities as well as a quarterly newsletter. However, only ten percent of the enrollees attend the activities. The

CNO staff attribute the lack of interest in the events to the retiring nature of many of the members and the travel time involved to attend the events, Also the area served by the CNO has no senior centers or any other type of meeting place where seniors might congregate except churches, but not all enrollees are church members.

Carle's enrollees are more likely to access PNPs by telephone than by personal contact, which contrasts greatly with the other three CNO sites, and which makes risk factors more difficult to detect. There IS therefore a need for enrollees, particularly those in the low-risk category, to practice preventive health and self-care as complements to the direct services they receive from the CNO and their personal physicians. The CNO has tried to increase the amount of face to face contact enrollees have with the PNPs by relocating nurses in the same clinics as primary care physicians. In addition, each nurse is teamed with one or more physicians who have CNO enrollees as patients so that the degree of care coordination between the CNO and primary care medical practice is increased.

Under the Carle system, a service coordinator reviews care plans and monitors the utilization of services by CNO enrollees. The CNO analyzes data on utilization patterns of care on a regular basis, and cases with the highest service utilization receive a comprehensive review. Utilization data is also shared with nurses, who. from prior experience at Carle, are accustomed to examining utilization data from the perspective of cost containment. Some rules for authorization of services have recently been developed and shared with the nurses. The nurses work in teams and rely on their teammates for critique and assistance in decision-making. Four basic factors are always considering when making service utilization decisions. These are: the patient's ability to care for her/himself; the availability of an informal care giver; the availability of community resources; and existing patient-provider relationships which the CNO tries not to disrupt. The ultimate goal is for nurses to understand their own individual practice patterns and employ a uniform application so that the same intervention is used by all muses in similar situations,

Carondelet Health Care

Carondelet Health Care (CHC) is a non-profit full-service health care corporation that has operated in Southern Arizona for 100 years. The Carondelet CNO operates in Pima and Santa Cruz counties, and currently has 12 community health centers located in senior centers, clinics, mobile home parks, and housing units. The program began operating in the Tucson area and has expanded to serve a Spanish-speaking population in Nogales. Right from its inception the program faced stiff competition from local HMOs, many of which have begun to offer services similar to those provided by the CNO.

The Carondelet CNO uses two distinct types of nurses as PNPs: (1) nurse case managers, who traditionally work with higher risk individuals in need of post-acute care or individuals that are home-bound; and

(2) nurse partners, who work in the community with lower risk individuals. While some of the nurse case managers have a mixed caseload (both high- and low-risk clients), the nurse partners only serve the low-risk beneficiaries in the community. In addition, some of the CNO nurses work only for the CNO and others split their time with other Carondelet programs, The Carondelet CNO also have a significant volunteer network in place to provide support services such as "friendly visits.' and transportation.

The budgetary implications of a relatively healthy case-mix within a risk-adjusted payment methodology has compelled the Carondelet CNO to develop a rather structured approach to cost containment. The Carondelet CNO has been the most aggressive site in attempting to standardize care decisions of the PNPs. The CNO management created the position of a Service Coordinator to serve as a centralized care decision maker. In assessing clients and fulfilling the care plan requirements, PNPs must justify their service decisions in the medical records. All records with service authorizations are then reviewed by the Service Coordinator for final authorization. Only 2 percent of all reviewed cases have shown disagreement between the Service Coordinator and the PNP. The Service Coordinator, in the context of an on-going dialog. helps the nurses to learn on a case by case basis, how to consider CNO goals when making decisions. The nurses view the Service Coordinator as a valuable resource, rather than as a gatekeeper.

Another reason for the success of the PNP/Service Coordinator relationship may be due in part to the use of a comprehensive set of criteria developed by the Carondelet CNO to indicate when a client should transition to a different level of care. The site has also developed several decision trees illustrating criteria for making a variety of care decisions and all Carondelet CNO nurses are trained with these tools,

Health promotion and prevention activities are an integral part of the CNO model. The program offers enrollees a variety of presentations on topics ranging from stress management to nutrition. The CNO staff have also developed educational materials to supplement oral instruction and videos for use with homebound enrollees. The materials and activities have been very well received by most enrollees and are one of the means used to keep low risk enrollees connected to the CNO.

Living at Home/Block Nurse Program

The Living at Home/Block Nurse Program Inc. (LAH) in Minnesota is a grass-roots community-based nursing organization dedicated to assisting communities to replicate a model of local volunteerism and nursing support for the elderly. To implement the CNO, LAH formed a contractual relationship with HealthSpan, the largest home health agency in the State. The CNO also has contractual relationships with physical therapists and Durable Medical Equipment (DME) providers. Under the CNO demonstration, HealthSpan and the LAH function as a team to effectively manage the accounting, financial, and service components of the demonstration.

For the CNO demonstration, the LAH CNO opened four sub-sites dedicated to CNO activities Two of the four sub-sites are in relatively rural areas, and the other two sites are within the St. Paul city limits. Eight PNPs are each assigned to one of the four sub-sites where they are involved in assessment, case management. monitoring clients, and community education and outreach. Compared to the Carondelet CNO, the LAH operates under a decentralized organizational structure. The project director has empowered the PNPs to manage the day-to-day operations of the four individual sub-sites, The PNPs at each site are involved in an effort to place a monetary value on clinical nursing practice. This is done by identifying and recording what they refer to as enhancements. Enhancements occur when a less expensive Medicare covered service is substituted for more expensive Medicare covered services, e.g. when a telephone call from an RN is substituted for a skilled nursing visit.

While other CNO sites utilize a network of volunteers, the LAH philosophy actively promotes volunteerism and community ownership of the program. Eleven percent of all enrollees are volunteers, and they appear to have a qualitatively different experience of the CNO from that of non-volunteers. Each of the LAH sub-sites has a group of volunteers that perform services such as providing transportation to appointments, shopping for homebound enrollees, and being a "friendly visitor." The nurses are learning to use the volunteers most effectively to enhance the CNO program. For example, review of recent time-on-task data suggests that LAH nurses spend less time doing paperwork than CNO nurses at other sites, which is likely due to the assignment of volunteers to administrative work.

At each sub-site, the community coordinator, plays a major role in the CNO model, supervising the volunteer groups, identifying resources in the community, and linking those resources to enrollees. The community coordinators are also primarily responsible for spearheading efforts to continue the CNO after the demonstration period is over. For some low-risk enrollees, the community coordinator is more actively involved in their care than the nurse. Over 90 percent of the total enrollment at LAH/BNP fall in the lowest payment cell, i.e. the lowest risk category. Therefore, not surprisingly, only 14 percent of all enrollees receive direct services from the PNP whereas 6 1 percent receive services from the community coordinators.

Visiting Nurse Service of New York

The Visiting Nurse Service of New York (VNS) is a multi-corporate entity providing a wide range of home health services and products to residents of the four most populous boroughs of New York City VNS is the largest non-profit Medicare Certified Home Health Agency in the nation. The VNS CNO has 28 urban sub-sites, all located in Queens and serviced by 11 CNO nurses. In contrast to the LAH sites, all the current VNS

CNO sub-sites are "host" sites in that the they are managed by some other group that allows the nurses to have space and meeting time with enrollees. Such sites include housing units, senior centers. and social clubs. Host sites are selected once the marketing staff enroll a significant number of enrollees in a given area. Because PNPs are located in areas that are frequented by CNO enrollees, enrollees become more familiar with the nurse and there is more opportunity for questions and on-going monitoring.

Each enrollee of the VNS CNO is assigned to one PNP who is responsible for assessments, case management, and the provision of services (if needed). Unlike the other three national CNO sites, PNPs of the VNS CNO are the only CNO employees that are permanently assigned to the various VNS sub-sites. The other national CNO sites have support staff or coordinators assigned to their respective sub-sites to assist the PNPs with the care of each sub-sites' enrollees.

Certain demographic and service delivery characteristics of VNS CNO area also emphasize the role of the PNP. For example, VNS CNO enrollees tend to have far greater access to physician specialty care than to physician primary care. Therefore, PNPs become an integral part of an enrollee's care system in that primary responsibility for care coordination and continuity is the sole responsibility of the PNP. Moreover, VNS enrollees are somewhat older and more functionally impaired than enrollees at the other three national CNO sites. Therefore, VNS PNPs tend to provide more direct care and must recognize the challenges of providing individualized services in addition to group-oriented preventive services. The VNS CNO also differs from other CNO sites because it emphasizes preventive social services as a means of preventing the somatization of problems. In this connection, the VNS CNO has contracts with social workers, a psychiatrist and a psychiatric nurse practitioner to provide therapy to enrollees.

The VNS CNO has recently considered developing care criteria similar to those used in Carondelet for high-risk enrollees. Currently, the CNO Project Director reviews the charts of all heavy users of services. As the Director begins the development of care criteria, there are concerns that such criteria will discourage the nurses from using discretion in making care decisions. The Director is considering sharing profile data with the nurses in an attempt to include them in the development of the care criteria. The nurses also receive feedback on their practice style from a clinical database program that is loaded on the laptop computers they use to record patient data. The program analyzes the data entered by the nurses and supplies them with prompts, reminders and suggestions that are aids in decision making.

Although the VNS enrollee population is sicker than the member populations at the other CNO sites, yet the VNS CNO remains financially healthy. A key reason for the site's profitability may be the low utilization rate of home health, a high cost service. The CNO nurses only authorize services that their patients need rather than the standard package that Medicare allows, as a result home health utilization in the VNS CNO is much

lower than utilization among regular Medicare beneficiaries served by the VNSNY home health agency. The site director also reports that the CNO has made a conscious effort to recruit sicker individuals who do not need home health services, since the CNO receives higher reimbursement rates for these enrollees without having to provide costly home health services.

Key Process Issues

The case studies of the sites will be updated and several cross-case issues will be discussed in the Annual Report. One central issue addressed in both the Interim and Annual Reports this year is the role of the ***CNO*** primary nurse provider (PNP), and how that role is developing at each site. Last year, for example, the Annual Report noted that the PNP role at the New York site might be developing somewhat differently from the PNP role at other sites, given that PNPs there were providing some services that had previously been available to the enrollees primarily from physician specialists. At other sites, PNPs appeared to be extending the services of primary care physicians in the community. Other differences in PNP practice patterns reflect local and institutional difference among the CNO sites. Critical to an understanding of this are the data in this volume on nurse activity and clinical practice, and there will be further discussion of nursing roles in the Annual Report.

A more general question for this demonstration has been: "How long does it take to demonstrate outcomes for the CNO?" This Interim Report suggests that more time is necessary, particularly to demonstrate the effects of prevention and early intervention. Prevention and early intervention became particularly important in this demonstration because of the high enrollments of relatively well elderly, a development that grew out of some constraints of the demonstration and some of the sites' early ideas about how to make a CNO intervention work financially. Given that each CNO site serves a substantial number of relatively well elderly clients, how long does it take to demonstrate the impact of preventive services on this population? Neither this nor any other HCFA demonstration has yet demonstrated that these results can be quickly established withing the time frame of a typical demonstration project. However, the Annual Report suggested last year that the use of preventive services may be important for other reasons. They are viewed positively by enrollees and by some subcontracted providers, and thus can be important to enrollment retention and other implementation strategies. This year, as the Annual Report will describe, some of the sites have determined that retention of large numbers of relatively well enrollees is not as critical to financial success as once thought. Some of the sites have strengthened the emphasis on effective management of high-risk enrollees, and the implications of this will be elaborated in the Annual Report.

Perhaps most critical is what might be seen as a paradox in the CNO intervention: the need to balance the objective to overcome service fragmentation for the elderly (inherent in the legislation's specification of case

management) with the objective of cost containment (inherent in the legislation's specification of capitation). The CNO sites have had to maintain a delicate balance between beneficiaries' needs and cost-containment. hence the issue of how to balance traditional case management, which seeks to provide and coordinate services for people who might not otherwise have sufficient services, with a managed care environment, which seeks to limit the provision of services that are deemed unnecessary. The following chapters provide the first glimpse of hard data that address both cost and client outcomes, and nursing roles that achieve these results. They begin to tell us if these two, possibly conflicting objectives, can be achieved. It has always been understood that the sites would have different approaches to achieving these objectives, and the Annual Report will shed light on these differences. It is hoped that next year's Final Report will provide the most comprehensive picture of the results of a demonstration that grew out of the ambitious CNO legislation.