Impact of the Medicare Catastrophic Coverage Act on Nursing Homes

LINDA LALIBERTE, VINCENT MOR,
KATHERINE BERG, ET AL.*

*Brown University, Providence, Rhode Island;
Abt Associates Inc., Cambridge, Massachusetts*

O VER THE PAST DECADE THE HEALTH CARE Financing Administration (HCFA) has implemented policy changes in the Medicare and Medicaid programs that have affected various aspects of the long-term-care system. In the 1987 Omnibus Budget Reconciliation Act (OBRA),[1] Congress enacted numerous regulatory changes designed to improve the quality of care provided to nursing-home residents by making changes in the facility survey process and mandating new approaches to documenting patient care. The Medicare Catastrophic Coverage Act (MCCA) of 1988[2] altered eligibility and coverage for skilled nursing facility (SNF) and hospice care and changed Medicaid eligibility rules for nursing-home residents. HCFA's issuance of an administrative directive (HCFA transmittal #222) clarifying and expanding the definition of what constitutes skilled care services under the Medicare SNF benefit resulted in a more liberal application of eligibility determinations by fiscal intermediaries (Bishop and Dubay 1991).

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*Coauthors are listed at the end of the article.
[1]P.L. 100-203.
[2]P.L. 100-360.

In addition to these explicit legislative and regulatory changes, continued pressure on the acute care sector to reduce lengths of hospital stay progressively increased the acuity level of individuals entering nursing homes and receiving home health services (Shaughnessy and Kramer 1990).

Our purpose in this article is to examine the impact of the ill-fated MCCA on nursing homes. In interpreting the results of our empirical analyses, we consider that the MCCA did not occur in a policy vacuum and may have instigated changes in the nursing-home industry that continued despite its repeal.

Background

When the MCCA was enacted in mid-1988, nursing homes were still struggling with the impact of hospital cost-containment initiatives of the mid-1980s and were facing the numerous reforms mandated in OBRA '87. Although the primary objective of this legislation was to protect Medicare beneficiaries from catastrophic costs attributable to acute care services, the MCCA reforms also influenced nursing homes via changes in Medicare eligibility and reimbursement rules, changes in the role of the hospital as the arbiter of postacute care, and changes in Medicaid eligibility. Those reforms that may have altered existing patterns of care in nursing homes are summarized in table 1.

Medicare's SNF benefit applies only when the resident receives daily skilled nursing or rehabilitative care following discharge from a hospital stay of three or more days. Under the MCCA the benefit still covered only skilled and rehabilitative care, but it altered copayments, the coverage period, and the restriction of a prior hospital stay. The legislation also reduced the deductible, copayment, and coverage period for hospital stays. During the MCCA year (1989) beneficiaries could enter SNFs directly from home, and nursing-home residents could switch to Medicare without first undergoing a hospital stay.

MCCA reforms to the SNF benefit increased Medicare's share of the nation's nursing-home bill and may have delayed patients' spending down to Medicaid, which, nevertheless, remained the payer of last resort. The MCCA included reforms that both restricted and expanded Medicaid eligibility. In response to the allegation that people were hiding assets to become Medicaid eligible, the MCCA changed the "look-

TABLE 1
Comparison of Benefits under the Medicare Catastrophic Coverage Act

Provisions	Pre-MCCA (1988)	MCCA (1989)	Post-MCCA (1990)
Prior 3-day hospital stay to receive Medicare SNF benefit	Yes	No	Yes
Average daily copayment for SNF care	One-eighth of inpatient deductible	20% of daily charge	One-eighth of inpatient deductible
Copayments for SNF	Days 21–100	Days 1–8	Days 21–100
SNF coverage period (days)	100 per "spell of illness"[a]	150 per calendar year	100 per "spell of illness"
Inpatient deductible	Once per spell of illness	Once per calendar year	Once per spell of illness
Average daily copayment for inpatient care (days 61–90)	25% of inpatient deductible	No copayment	25% of inpatient deductible
Average daily copayment for 60 lifetime reserve days	50% of inpatient deductible	No limit on covered days	50% of inpatient deductible
Spousal impoverishment provisions	Maximum of $1,900 in resources may be retained	Minimum of $12,000 in resources may be retained	
	Spousal support at SSI level	Spousal support at 122% of monthly federal poverty income level (2-person household)	
		Effective 9/30/89	
Medicaid eligibility "lookback period"	24 months (until 7/1/88)	30 months	

[a]The MCCA eliminated the spell of illness, which was defined as beginning with a hospital admission and ending on the 61st day following discharge from the hospital or from a consecutive stay in a SNF.
Abbreviation: SSI, Supplemental Security Income; SNF, skilled nursing facility.

back period" from 24 to 30 months (effective 7/1/88), which translated into assets that were transferred within 30 months of applying for Medicaid being counted as resources in determining eligibility. To address critics' charges that community-dwelling spouses of nursing-home residents were forced into poverty in order for their mates to qualify for Medicaid, eligibility criteria became less restrictive under the MCCA "spousal impoverishment" provisions (effective 9/30/89), thereby increasing the income and asset allowances that community-dwelling spouses of nursing-home residents could retain while preserving Medicaid eligibility. These provisions survived the MCCA repeal.

We will examine the impact of the MCCA on nursing homes, using multiple data sources that provide rich information about nursing-home residents before, during, and after the one-year period that the MCCA was in effect. We investigate the mix of residents admitted to nursing homes, their length of stay, discharge disposition, the intensity of services provided during SNF stays, and the rate of hospitalization and changes in payer source among nursing-home residents.

Data and Methods

We use two data sources for these analyses: (1) the National Health Corporation (NHC) computerized resident assessment and follow-up data on all residents in 48 nursing homes in six states; and (2) the Continuous Medicare History Sample, which contains longitudinal Part A and B claims data for a 5 percent random sample of all Medicare beneficiaries.

NHC Data

National Health Corporation, a for-profit organization that owned or managed 82 nursing homes in nine southeastern states as of 1986 (48 homes were continuously owned in the study period), has maintained computerized resident assessment data since 1974 and has made these data available for research purposes (Intrator et al. 1996; Kiel et al. 1994; Mor, Intrator, and Laliberte 1993). The data are derived from assessments conducted at admission, at an interval of one to three months postadmission, and on a periodic basis during residency (ranging from monthly to quarterly, depending on level of care). Reassessments are

conducted at any point-of-change in level of care and at discharge. In addition to demographic information, assessments contain detailed information on physical and cognitive functioning, need for skilled nursing services, and use of various classes of pharmaceuticals and other special services. The status of all residents who are discharged from NHC facilities is documented via telephone follow-up three months after discharge. Linked assessment and discharge follow-up records provide a wealth of longitudinal, resident-level information, including intermittent hospital admissions and dates of payment source changes.

The NHC data are ideal for studying the impact of the MCCA on the mix of residents served in nursing facilities because, in contrast to most U.S. nursing homes, its facilities have traditionally served a high volume of Medicare residents. It is likely that NHC had both the financial incentive and the organizational capacity to respond more swiftly than other facilities to MCCA changes in Medicare reimbursement provisions. In this sense NHC can be considered an "industry leader," whose behavior might suggest how other facilities would have responded had the MCCA been in effect longer. NHC analysis files are described below.

Annual Admission Cohorts from 1983 to 1990.   This analytic file contains data on 59,275 admissions to any NHC facility during each year, the associated length of stay, and, when appropriate, the discharge disposition. The unit of analysis is the admission; individuals can be represented multiple times in this analytic file if they had multiple admissions during the study period. One-half (29,150) of all admissions were covered by Medicare, and 10 percent (5,572) of all admissions came directly from home. This file was used to test the effect of the MCCA on the mix of residents admitted to nursing homes in terms of preadmission status, payer source, case mix, length of stay, and discharge disposition.

New Admission Cohort Followed through Discharge from 1986 to 1991. It is possible to follow a single resident over successive admissions to NHC facilities, including any resident who is hospitalized or enjoys a brief home stay and later returns either to the same nursing home or to another NHC facility. This file contains longitudinal assessment data for all residents who were first admitted between January 1, l986, and October 1, 1990, to any of the 42 facilities in Missouri, Kentucky, South Carolina, and Tennessee that were continuously owned and operated by NHC. To identify new admissions for this analytic file, we selected cases that met the following criteria:

1. The first known record was classified as an admission record.
2. The resident's prior location was not a nursing home.
3. The cumulative length of stay at the time of admission was zero.
4. The resident's identification number was not in the prior year's records.

This file was used to test the impact of MCCA on the probability and rate of change in payer source from private or Medicaid to Medicare.

Health Care Financing Administration Five Percent File

The Medicare population in our MCCA analyses is a 20 percent sample of the 5 percent file, that is, 1 percent of elderly Medicare beneficiaries who were alive on April 1, l986. We excluded two groups of beneficiaries—those with cross-referenced claims (i.e., receiving services under more than one health insurance claim [HIC] number) and those enrolled in a health maintenance organization (HMO) at any time during the study period—from the sample because their claims histories were possibly incomplete. We linked Part A and B claims data for the years 1986–92 for this cohort and created the analysis files described below.

Nursing-Home Episode File. To examine the duration, cost, and composition of nursing-home episodes from the longitudinal cohort of 345,873 elderly beneficiaries, we selected beneficiaries who were at least 70 years of age and who had at least one nursing-home episode. To assure adequate follow-up time, we excluded episodes that began in 1992, but we followed all prior episodes through December 31, 1992. We identified 78,965 episodes; individuals are represented multiple times in this file if they had more than one nursing-home episode during the study period.

Our operational definition of a nursing-home episode was triggered by evidence of a Part A SNF claim (skilled care) or a Part B claim in which place of service was a nursing home. Once the episode was triggered, it was considered a single episode as long as there was evidence of continued nursing-home care (i.e., a Part A SNF claim or a Part B claim indicating the nursing home as place of service) with no more than a 60-day gap between these Part B claims. Under our definition, a nursing-home episode beginning with an SNF stay continues after the

resident is discharged from skilled care as long as the resident remains in the nursing home (as evidenced by appropriate Part B claims), provided that no more than 60 days elapse between these Part B claims. Episodes may also begin with a Part B claim and convert to an SNF (Part A) claim; they continue until there is either an indication of a discharge or a gap of 60+ days with no Part B nursing-home claim. However, if a hospitalization follows an SNF discharge, the nursing-home episode continues through that hospitalization as long as the patient returns to a nursing home.

A nursing-home episode may terminate in several ways. Following a hospital admission, if there is no return to the nursing home within 60 days, the day prior to admission to the hospital is used to define the end of the nursing-home episode. If there is no hospital stay terminating the nursing-home episode and there is a 60-day period without a nursing-home claim, the episode terminates on the date of the last claim. A claim for hospice, home health, or admission to a rehabilitation (long-stay) hospital terminates the nursing-home episode on the date prior to the start of service date on that claim. A nursing-home episode also terminates when there is a valid date of death for the resident.

Specification of Hypotheses

We examined the impact of the MCCA on nursing-home case mix, length of stay, discharge disposition, hospitalization rates, the clinical intensity of nursing-home episodes, and payer source transition rates. We posited several hypotheses, which are summarized in table 2 along with their underlying rationales and the data sources used to test the effects of the MCCA.

We hypothesized that Medicare admissions to nursing homes, particularly those directly from home, would increase. We expected that the acuity level of residents would increase and that the number of intermittent hospitalizations by nursing-home residents would decrease because there was no reimbursement incentive for a hospitalization. We believed that the increase in the acuity level of residents would lead to an increase in the proportion of patients with Medicare claims for more "intensive" services. We expected longer lengths of stay, particularly under Medicare, because of changes in the copayment provisions, and we hypothesized that the proportion of nursing-home stays with a discharge disposition of death would increase during the MCCA year be-

TABLE 2

Impact of the Medicare Catastrophic Coverage Act on Nursing Homes: Hypotheses and Data Source

Underlying rationale for hypotheses	Hypotheses	Data source
Elimination of 3-day prior hospital stay increased access to nursing-home care for Medicare beneficiaries.	A greater proportion of nursing-home admissions will be financed by Medicare.	NHC annual admission cohorts (see table 3).
	A greater proportion of nursing-home patients will be admitted directly from home.	NHC annual admission cohorts; HCFA nursing-home episode file (see table 3).
Elimination of 3-day prior hospital stay removed reimbursement incentive for hospitalization. The increased coverage period for SNF care provided the financial incentive for nursing homes to manage patients' medical conditions in the nursing facility.	The acuity level of nursing-home residents will increase.	NHC annual admission cohorts (see table 3).
	There will be fewer intermittent hospitalizations of nursing-home residents.	HCFA nursing-home episode file (see table 4).
	There will be more "intensive" ancillary services provided to nursing-home residents.	HCFA nursing-home episode file (see table 5).

SNF copayments were reduced and applied to days 1–8 rather than days 21–100, removing the financial incentive to limit stays to 20 or fewer days. The increase in the benefit period from 100 days per spell of illness to 150 days per year also reduced incentives for early discharge.	Nursing-home length of stay will increase.	NHC annual admission cohorts; HCFA nursing-home episode file (see table 6).
Elimination of 3-day prior hospital stay made it easier for terminally ill residents who were being cared for at home to enter nursing facilities. The revised copayment schedule for the SNF benefit reduces the financial burden of a nursing-home stay.	The proportion of nursing-home stays with a discharge disposition of death will increase.	NHC annual admission cohorts; HCFA nursing-home episode file (see table 7).
Because a prior hospital stay was not required to become eligible for the SNF benefit, nursing-home residents who were otherwise eligible could change from another payment status to Medicare without leaving the facility.	There will be an increase in the rate of change in the payer source for nursing-home stays, from self-pay or Medicaid to Medicare.	NHC new admission cohort (see table 8); HCFA nursing-home episode file.

Abbreviations: HCFA, Health Care Financing Administration; NHC, National Health Corporation; SNF, skilled nursing facility.

cause of elimination of the hospital stay requirement and the revised copayment schedule. Finally, because of the relaxed eligibility criteria for the SNF benefit, we expected to see an increase in the rate of payer source change from self or Medicaid to Medicare.

Analytic Approach

We characterized the trend in the various case mix measures contained in the *NHC annual admission cohorts* over the seven-year period, using contingency tables and the Mantel–Haenszel test for trend. Because of the large sample size, the Mantel–Haenszel test was evaluated for significance at the $p = .001$ level. The Mantel–Haenszel statistic is equivalent to the "scores" test when assuming a logistic distribution and testing the hypothesis of no association. We used logistic regression to test whether the change during the 1989 MCCA period significantly departed from what would have been expected on the basis of the historical trend. The models contain two independent variable terms: a seven-level variable containing a category for each study year and a separate indicator variable reflecting the 1989 year. The odds ratio associated with the 1989 term was evaluated at the $p = .05$ level of significance. It is adjusted for the effect of the linear term, which reflects the trend in NHC admissions between 1983 and 1989. Odds ratios greater than 1.0 suggest that nursing-home admissions with the given characteristics are more likely to occur than would have been expected based on the linear trend. Odds ratios smaller than 1.0 indicate the opposite. To simplify both computation and interpretation, we dichotomized categorical variables and estimated logistic regression models.

We analyze the pattern of Medicare nursing-home use in the *nursing-home episode file* according to "periods" defined in relation to the MCCA year. (The 4,654 episodes, representing only 5 to 6 percent of all episodes, that began before the MCCA period but extended into it were dropped from these analyses because they tended to be very long, highly heterogeneous, and unique.) We define episodes according to three periods:

1. beginning and ending prior to the MCCA year (pre-MCCA)
2. beginning and ending during the MCCA year or extending beyond the MCCA year (MCCA-plus)
3. beginning after MCCA (post-MCCA) but before 1992

The observation period for the content of episodes continues through 1992. We used a simple chi-square test to determine whether the proportion of Medicare beneficiaries with a particular quality of interest (e.g., discharge disposition) differed across the periods. When the outcome variable was continuous, e.g., cost or percentage of users of a given type of service, we used analysis of variance to compare the means across the three periods.

We ran semi-Markov transition models on the *NHC new admission cohort* to test the effect of the MCCA year on the rates of change in payment source to Medicare, controlling for the competing risk of death or transition to another payment source. We ran a separate model for each possible transition, including payer source changes, death, and censoring. The numbers of discharges to hospital or to home were treated as time-varying covariates because many of these residents returned to the nursing home and could have payer source transitions. The risk set included all residents who were in the current "state." To estimate the rate of change from the current state "Medicaid" to the event "Medicare," we identified as the risk set all residents with Medicaid at any point during their nursing-home stay (i.e., in the current state). The risk of converting to Medicare was one of the possible transitions from Medicaid that could take place (including transitions to self-pay, other payers, death, and censoring). Residents with Medicaid whose payer source changed to Medicare were considered to have an "event," and all others were censored. Details of the semi-Markov model and the effect of the MCCA on spenddown to Medicaid appear elsewhere (Intrator et al. 1996).

Results

Changes in the Case Mix of Admissions to Nursing Homes

During the period 1983–89, approximately 86 percent of NHC admissions were transferred from a hospital, 9 percent came from home, and 4 percent arrived from another nursing home (table 3). There was a significant increase in admissions from home and a significant decrease in admissions from hospital. The odds ratio associated with the MCCA year (1989) indicates that, in addition to this linear trend, significantly more admissions were from home ($OR = 1.14$) and significantly fewer

TABLE 3
Resident Characteristics at Admission

NHC annual admission cohorts (n = 59,275)	1983	1984	1985	1986	1987	1988	1989	Trend[d] 1983–89	Odds Ratio[e] for 1989
Pre-admission location									
Home	9.2	9.1	9.4	9.8	9.5	9.8	11.2	<.001	1.14*
Hospital	86.6	87.1	86.7	86.5	85.9	84.6	84.6	<.001	0.88*
Nursing home	4.2	3.8	3.8	3.6	3.6	4.3	4.2	NS	1.09
Primary payer									
Self	19.4	21.1	21.7	26.5	27.5	26.5	22.5	<.001	0.67*
Medicaid	28.1	25.5	23.5	22.0	22.6	22.0	16.0	<.001	0.76*
Medicare	47.4	48.7	50.6	46.7	45.2	47.2	58.9	<.001	1.68*

	Percent		
HCFA nursing-home episode file (n = 78,965)	Pre-MCCA[a] n = 31,799	MCCA-plus[b] n = 14,510	Post-MCCA[c] n = 32,656
Pre-admission location			
SNF episodes	n = 3,168	n = 1,820	n = 4,087
Home/unknown***	7.6	14.1	5.0
Home care	0.1	0.1	0.0
Acute care***	91.9	85.4	94.6
Rehabilitation	0.4	0.4	0.4

SNF and non-SNF blended episodes	$n = 2,182$	$n = 1,834$	$n = 3,824$
Home/unknown***	25.6	41.0	30.5
Home care	0.1	0.2	0.1
Acute care***	73.7	57.9	68.7
Rehabilitation	0.6	1.0	0.7
Non-SNF episodes	$n = 26,449$	$n = 10,856$	$n = 24,745$
Home/unknown***	88.7	91.0	91.9
Home care*	0.2	0.2	0.3
Acute care***	11.0	8.6	7.6
Rehabilitation	0.2	0.2	0.2

[a]Pre-MCCA episodes began in 1986–88 and ended before 1989.
[b]MCCA-plus episodes began in 1989.
[c]Post-MCCA episodes began in 1990 or 1991.
[d]Mantel–Haenszel test for trend used; a separate significant level for each row is generated.
[e]Odds ratio for 1989 year term from model including term for 1983 through 1989.
*$p < .05$; ***$p < .001$.
HCFA Data Sources: HISKEW file; inpatient claims; SNF claims; Medicare Part B claims; hospice claims; home health claims from home health skeleton files 1986–88; and SAF 1989–92.
Abbreviations: HCFA, Health Care Financing Administration; HISKEW, Health Insurance Skeleton Eligibility Write-Off; NHC, National Health Corporation; SAF, standard analytic files; SNF, skilled nursing facility.

were from a hospital ($OR = 0.88$). These effects were even stronger when we examined Medicare admissions only (data not shown). Medicare residents were twice as likely to be admitted from home in 1989 ($OR = 2.01$) and nearly one-half as likely to be admitted from a hospital ($OR = 0.55$). Overall, and for Medicare admissions only, the odds of admission from another nursing home did not differ significantly in 1989 from what we would predict based on the historical trend.

Using the nursing-home episode file (lower panel of table 3), we also observe the effect of dropping the prior hospital stay requirement for nursing-home episodes that include a Medicare SNF component. Preadmission location was indicated by service use in the 15 days prior to the start of each episode. In the MCCA-plus era, 14.1 percent of exclusively SNF episodes began from home, in contrast to 7.6 percent prior to the MCCA and only 5.0 percent after its repeal. Conversely, only 85.4 percent of episodes followed a hospital stay during the MCCA period, in contrast to 94.6 percent in the post-MCCA period and 91.9 percent for episodes that began before 1989. Even among blended (Medicare SNF days and non-Medicare nursing-home days) episodes, we observe lower rates of admission directly from the hospital during the MCCA period relative to the pre- and post-MCCA periods (57.9 percent vs. 73.7 percent and 68.7 percent, respectively).

Analysis of the NHC annual admission cohorts reveals that one-half of admissions to NHC homes were Medicare covered, with Medicaid accounting for approximately one-quarter and self-pay accounting for approximately one-fifth of admissions (table 3). Medicaid admissions decreased from 28 percent in 1983 to 16 percent in 1989, and Medicare admissions increased from 47 percent to 59 percent over this same time frame ($p <. 001$). The odds ratio for the MCCA year reflects a significant increase in the odds of Medicare coverage at admission ($OR = 1.68$) and a significant decrease in the odds of being admitted in the self-pay ($OR = 0.67$) or Medicaid ($OR = 0.76$) categories, even when controlling for the obvious linear trend. We observe a similar MCCA effect in the nursing-home episode file, as calculations based on data in the table show the proportion of SNF and blended episodes increasing to 25.2 percent from the pre-MCCA level of 16.8 percent, but stabilizing at 24.2 percent.

We examined selected indicators of case mix severity (data not shown) in the NHC annual admission cohorts to compare resident acuity over a seven-year period. Activities of daily living (ADL) dependencies were defined as requiring human assistance and were categorized as three or

fewer dependencies, four dependencies, five dependencies and able to eat, five dependencies and tube fed. We also used a five-category summary of New York State's 17-category Resource Utilization Group-II (RUG-II) case mix reimbursement classification of nursing-home residents according to the intensity of their need for services. The proportion of residents in the least dependent ADL group—those with three or fewer dependencies—decreased significantly from 13 percent in 1983 to 8 percent in 1989, whereas those with five or more dependencies who were being tube fed rose significantly from 12 percent in 1983 to 17 percent in 1989. Controlling for this linear trend, there was a significant decrease in the odds of an admission being in the least dependent group ($OR = 0.90$) and a slight increase in the odds of an admission being in the most dependent group ($OR = 1.02$) during the MCCA year. Among Medicare admissions, this increase in the odds of being in the most dependent group reached almost 50 percent ($OR = 1.45$) in 1989. Among the five RUG-II categories, the proportion designated as "special care" exhibited a significant decrease during the MCCA year relative to the general trend ($OR = .86$). When only Medicare admissions were examined (data not shown), we found no trend over time, but we did discover an increase in the odds of clinically complex ($OR = 1.12$) and behavioral problem ($OR = 3.20$) groups being admitted during the MCCA year.

Changes in Hospital Use during Nursing-Home Episodes

Over all periods, 25 percent of nursing-home episodes with an SNF component included an intervening acute-care hospitalization. Table 4 shows the distribution of hospital stays by nursing-home episode length of stay for each analytic period. It also presents the average and median number of inpatient days per episode and total consumer price index (CPI)-adjusted reimbursement per hospitalization. Contrary to our expectations, we observed an *increase* ($p < .001$) in the proportion of episodes with an intervening hospitalization during the MCCA-plus period (30.5 percent) relative to the pre-MCCA period (22.8 percent), which continued during the post-MCCA period (30.6 percent). Stratifying by nursing-home length of stay reveals a slight decrease in intermittent hospitalizations during the MCCA period only among residents with 22- to 150-day episodes.

    The average (as well as median) number of inpatient days per nursing-

TABLE 4
Distribution, Duration, and Reimbursement of Hospitalizations
within Nursing-Home Episodes

Percent of SNF and blended episodes that include a hospitalization	Pre-MCAA[b] n = 5,350	MCAA-plus[c] n = 3,654	Post-MCAA[d] n = 7,911
Nursing-home episode length of stay (days)			
0–7	0	0	0.1
8–21	1.4	1.7	1.5
22–90*	19.6	18.3	21.6
91–150	44.5	41.5	48.8
151–1500*	68.0	69.0	72.8
All episodes***	22.8	30.5	30.6
SNF or blended episodes that include a hospitalization	n = 1,193	n = 1,114	n = 2,420
No. of inpatient days per hospitalization***			
Mean	17	22	19
(Median)	(15)	(14)	(12)
Reimbursement per hospitalization ($)[a],***			
Mean	8,076	9,755	8,073
(Median)	(6,005)	(6,393)	(5,635)

[a]CPI-adjusted to 1990 dollars.
[b]Pre-MCCA episodes began in 1986–88 and ended before 1989.
[c]MCCA-Plus episodes began in 1989.
[d]Post-MCCA episodes began in 1990 or 1991.
*$p < .05$; ***$p < .001$.
HCFA Data Sources: HISKEW file; inpatient claims; SNF claims; Medicare Part B claims; hospice claims; home health claims from home health skeleton files 1986–88; and SAF 1989–92.
Abbreviations: CPI, consumer price index. See table 3.

home episode (regardless of the number of hospitalizations) is longer during the MCCA-plus period than during the pre- or post-MCCA periods. Average reimbursements per episode parallel their duration, peaking in the MCCA-plus period.

Clinical Content of Nursing-Home Episodes

We describe the clinical content of nursing-home episodes based upon Medicare claims for services provided to nursing-home residents.

Table 5 presents daily and total Medicare accommodation and ancillary charges (CPI-adjusted to 1990 dollars) as well as combined Part A and Part B total charges for the following separately billed classes of ancillary services: therapy, laboratory, drug, radiology, routine care (foot care, incontinence durable medical equipment [DME], decubitus care, venipuncture, and chest x-ray). More intensive services targeted to "sicker" patients (parenteral nutrition or therapies, pulmonary care, oxygen, inhalation therapy, special services, and consults) are shown as well. Average daily Part A SNF accommodation charges increased from $122 during pre-MCCA episodes to $149 during the MCCA-plus era, stabilizing at $142 in the post-MCCA period. Average ancillary Part A charges also increased steadily over the study period, with charges of $93 per SNF day in the pre-MCCA period increasing to $125 in the post-MCCA period. Examining the combined Part A and B charges by category of service, we see steady increases from the MCCA period to the post-MCCA period for therapy, drugs, laboratory, "sicker," and psychiatric services. The charge data are skewed in the "sicker" service category, as there were no charges for most residents during the study period.

In the lower half of table 5 we present the proportion of episodes with an SNF component that include a Part A or Part B claim for the same classes of ancillary services. Across analytic periods, the drug category had the highest proportion of episodes with claims. We observe a general increase in episodes with claims across almost all classes of services between the pre-MCCA period through the MCCA period into the post-MCCA period. The proportion of episodes with charges for intensive services combined into the "sicker" category increased during the MCCA period and decreased in the post-MCCA period (31, 38, and 33 percent, respectively), suggesting not a trend, but rather a specific MCCA effect.

Changes in Length of Stay

Table 6 reveals that lengths of stay for NHC admissions became significantly shorter over time, from a median of 41 days in 1983 to 33 days in 1988. During the MCCA year, the median length of stay increased significantly to 39 days. The odds of a stay lasting less than 21 days during this year were significantly lower ($OR = .74$) than expected based upon the linear trend, and stays of more than 150 days were significantly more probable ($OR = 1.39$) (data not shown).

TABLE 5
Medicare Charges for Nursing-Home Episodes

Charges[a]	Pre-MCCA (n = 5,350)		MCCA-plus (n = 3,654)		Post-MCCA (n = 7,911)	
	Mean	Median	Mean	Median	Mean	Median
Part A—per episode ($)						
Accommodation***	3,154	1,749	5,463	2,616	4,331	2,530
Ancillary***	1,909	773	2,831	1,163	3,186	1,506
Part A— per SNF day ($)						
Accommodation***	122	100	149	107	142	110
Ancillary***	93	54	107	56	125	78
Combined Part A and Part B						
Therapy***	780	141	1,330	249	1,597	500
Laboratory***	161	27	263	58	276	71
Drug***	499	152	672	221	714	265
Radiology***	121	0	183	32	169	26
Routine[b],***	44	0	129	10	87	8
Sicker[c],***	241	0	463	0	488	0
Supplies***	324	34	409	49	367	56
Visits***	73	15	171	40	148	50
Psychiatric care	6	0	13	0	16	0

SNF or blended nursing-home episodes with any charges	Percent with any charge		
	Pre-MCCA n = 5,350	MCCA-plus n = 3,654	Post-MCCA n = 7,911
Combined Part A and Part B charges			
Therapy	56	60	69
Laboratory	57	66	68
Drug	79	85	88
Radiology	48	58	58
Routine[b]	40	54	57
Sicker[c]	31	38	33
Supplies	67	71	73
Visits	51	62	70
Psychiatric care	2	4	4

[a]Charges are CPI-adjusted to 1990 dollars.
[b]Routine = sum of foot care, incontinence DME, decubitus, venipuncture, and chest X ray.
[c]Sicker = sum of parenteral, pulmonary care, oxygen, inhalation therapy, special services, and consults.
***p <.001.
HCFA Data Sources: HISKEW file; inpatient claims; SNF claims; Medicare Part B claims; hospice claims; home health claims from home health skeleton files 1986–88; and SAF 1989–92.
Abbreviations: DME, durable medical equipment. See table 4.

TABLE 6
Length of Stay of Patients Admitted to Nursing Homes

NHC annual admission cohorts, Medicare admissions only (n = 33,457)	1983	1984	1985	1986	1987	1988	1989	Trend[a] 1983–89
Median length of stay (days)	41	34	34	30	32	33	39	<.001

	Percent		
HCFA nursing-home episode file, SNF episodes only (n = 9,075)	Pre-MCCA n = 3,168	MCCA-plus n = 1,820	Post-MCCA n = 4,087
Mean (SD)	34.1 (57.9)	39.7 (65.5)	32.1 (50.4)
Median**	17	21	19
Episode (days)***			
0–7	21.1	18.5	18.7
8–21	38.0	33.1	38.2
22–90	33.0	38.1	36.7
91–150	5.0	6.7	5.0
151–3000	2.9	3.6	1.5

[a]Mantel–Haenszel test for trend.
**Kruskal-Wallis test, $p < .01$; ***$p < .001$.
HCFA Data Sources: HISKEW file; inpatient claims; SNF claims; Medicare Part B claims; hospice claims; home health claims from home health skeleton files 1986–88; and SAF 1989–92.
Abbreviations: See table 3.

Table 6 shows length-of-stay distributions for SNF episodes from the nursing-home episode file. Among SNF-only episodes, we observe a significant increase in the median length of stay associated with episodes beginning in the MCCA period. Furthermore, as observed in the NHC data, there was a significant decline in the proportion of SNF stays lasting less than 21 days. There was also a significant increase in lengths of stay of between 22 and 150 days for episodes beginning in the MCCA period.

Changes in Discharge Disposition

As shown in table 7, there were significant trends in the discharge disposition of NHC admissions from 1983 through 1989. Discharges to home increased from 24 percent in 1983 to 28 percent in 1989; dis-

TABLE 7
Discharge Disposition of Patients Admitted to Nursing Homes

NHC annual admission cohorts (n = 59,275)	1983	1984	1985	1986	1987	1988	1989	Trend[a] 1983–89	Odds Ratio[b] for 1989
Discharge location									
Home	24.0	24.0	25.3	24.8	23.8	24.8	28.5	<.001	1.21*
Hospital	46.7	46.8	44.3	45.1	45.3	44.8	39.2	<.001	0.81*
Nursing home	8.2	8.0	8.8	8.5	8.3	7.8	8.0	NS	0.98
Dead	21.0	21.2	21.6	21.5	22.5	22.6	24.3	<.001	1.08*

	Percent		
HCFA nursing-home episode file (n = 78,965)	Pre-MCCA n = 31,799	MCCA-plus n = 14,510	Post-MCCA n = 32,656
All episodes			
Home/gap >60 days***	71.0	67.7	63.8
Home health***	9.1	8.8	11.5
Acute care***	1.2	0.9	0.9
Death***	18.7	20.0	17.1
Rehabilitation	0.0	0.0	0.0
Continuing stay	0.0	2.7	6.7

SNF-only episodes	*n* = 3,168	*n* = 1,820	*n* = 4,087
Home/gap >60 days***	31.5	32.6	28.5
Home health***	33.0	30.5	38.4
Acute care**	1.9	0.8	1.2
Death**	33.7	36.0	31.7
Rehabilitation	0.1	0.2	0.1
Continuing stay	0.0	0.0	0.2
SNF and non-SNF blended episodes	*n* = 2,182	*n* = 1,834	*n* = 3,824
Home/gap >60 days***	38.8	38.0	33.0
Home health***	15.4	9.1	11.5
Acute care	1.1	1.2	0.8
Death***	44.6	42.8	37.2
Rehabilitation	0.1	0.0	0.0
Continuing stay	0.0	9.1	17.5

[a]Mantel–Haenszel test for trend; a separate significant level for each row is generated.
[b]Odds ratio for 1989 year term from model, including term for 1983 through 1989.
*p < .05; **p < .01; ***p < .001
HCFA data sources: HISKEW file; inpatient claims; SNF claims; Medicaid Part B claims; hospice claims; home health claims from home health skeleton files 1986–88; and SAF 1989–92.
Abbreviations: See table 3.

charges to a hospital decreased from 47 percent to 39 percent; and discharges due to death increased from 21 percent to 24 percent. The odds ratios for the MCCA year indicate an additional statistically significant decrease in the probability of discharge to a hospital ($OR = .81$), an increase in the probability of death ($OR = 1.08$), and a 21 percent increase in the odds of a discharge to home ($OR = 1.21$).

Table 7 also shows the distribution of reasons for ending a nursing-home episode as determined from the Medicare claims data. The MCCA-plus period has a significantly higher rate of discharge due to death (20.0 percent) than the pre-MCCA (18.7 percent) or post-MCCA (17.1 percent) periods. Among SNF-only episodes, 36.0 percent of all discharges in the MCCA-plus period end in death, compared with 33.7 percent and 31.7 percent of SNF episodes in the pre- and post-MCCA periods, respectively. This finding does not persist for blended episodes, which include both skilled and custodial care. Discharge with home health services decreased during the MCCA period among SNF only and blended episodes, contrasting sharply with the linear trend for increased home health service use by Medicare beneficiaries (Bishop and Skwara 1993).

Changes in Payer Source

We examined this issue in both the NHC longitudinal data and the nursing-home episode file, albeit in slightly different ways. In the latter case, for each analytic period we examined the proportion of blended SNF and non-SNF nursing-home episodes in which beneficiaries' coverage changed from non-SNF (as evidenced by Part B claims) to SNF (Part A claim) at least once (data not shown). In the pre-MCCA period, 28.7 percent of all blended episodes changed from Part B to Part A (in all cases with an intermittent hospitalization), increasing to 40.9 percent during the MCCA period before dropping again to 33.7 percent. Each of these paired comparisons was highly statistically significant ($p < .001$).

We also examined the rate of payer source change from self-pay to Medicare and from Medicaid to Medicare among all new admissions to NHC facilities between 1986 and 1990. The number of intermittent hospitalizations and the number of discharges to home were used as time-varying covariates in the model because readmissions to the facil-

ity also may be associated with payer source transitions. Using semi-Markov, continuous time and state transition models, we tested for the effect of being a resident in an NHC facility during 1989 on the rate of payer source transition, while controlling for payer source at admission, functional status at admission, selected diagnoses, demographics, and the state in which the nursing home was located. The rates are based upon Cox-like proportional hazard models, which yield parameter estimates of the effect of a given covariate level on the instantaneous risk of transition from Medicaid to Medicare. The results of the analyses summarizing the transition from Medicaid to Medicare, which are presented in table 8, reveal that residents of NHC homes during 1989 were over three times as likely to convert from Medicaid to Medicare relative to 1988, the reference year (OR 3.1). This effect is present even when controlling for the fact that the individual may have originally been admitted to the home under the Medicare SNF benefit (*OR* 1.5) and controlling for the number of intermittent discharges to hospital and home. Demographic factors like age, sex, and education were unrelated to this change in payer source, but residents in the most ADL-impaired group at the time of admission were 70 percent more likely to convert to Medicare (*OR* 1.7; $p < .001$). Similar analyses of the rates of transition from self-pay to Medicare among residents in NHC facilities also revealed a large (*OR* 1.7; $p < .001$) increase during the MCCA year (data not shown).

Conclusions

We used two data sources to assess the impact of the Medicare Catastrophic Coverage Act on the rate and pattern of nursing-home use—a 1 percent random sample of Medicare beneficiaries and a population of residents of a chain of for-profit nursing homes that serves a disproportionate share of Medicare beneficiaries. The pattern of findings suggests that both the nursing-home industry and Medicare beneficiaries benefited in some respects from the MCCA changes to the SNF benefit. We found that the proportion of all nursing-home episodes with a Medicare SNF component increased in 1989, confirming results obtained using other data sources (Aaronson, Zinn, and Rosko 1994; Liu and Kenney 1993). We also confirmed that more residents were admitted to nursing homes directly from home in 1989, particularly those covered by Medi-

TABLE 8
Semi-Markov Analysis of the Rate of
Transition from Medicaid to Medicare:
Effect of Year of Residence and Other Covariates[a]

Variable	Parameter estimate	OR	p = value
Medicare at admission	0.41	1.51	0.00
ADL = 2 dependencies	0.05	1.05	0.76
ADL = 3 dependencies	0.19	1.21	0.22
ADL = 4 dependencies	0.11	1.11	0.51
ADL = 5 dependencies	0.55	1.73	0.00
Acute diagnosis	−0.14	0.87	0.93
Chronic diagnosis	−0.15	0.86	0.14
Female	−0.14	0.87	0.15
Age in years >65	0.01	1.01	0.07
Married	0.05	1.05	0.64
Tennessee	0.09	0.91	0.51
South Carolina	0.15	1.16	0.21
Kentucky	0.33	0.72	0.00
Number of home episodes	0.55	0.58	0.00
Number of hospital episodes	0.28	0.76	0.07
High school graduates	0.32	1.38	0.00
College graduates	0.29	1.34	0.00
Admission in 1986	0.38	1.46	0.13
Admission in 1987	0.13	0.88	0.45
In NHC during 1989	1.14	3.12	0.00
In NHC during 1990	0.52	1.66	0.00
High school graduate in 1989	0.39	0.68	0.10
High school graduate in 1990	0.33	0.72	0.23

[a]Number of events = 791; number of Medicaid recipients = 4,211.
Data Source: NHC new admission cohort.
Abbreviations: ADL, activity of daily living; OR, odds ratio; NHC, National Health Corporation. See table 3.

care. Resident acuity level increased, as was evidenced by an increase in Medicare claims for more "intensive" ancillary services, a nearly 50 percent increase in the odds of SNF patients with five ADL dependencies plus tube feeding being admitted to NHC nursing homes in 1989 relative to earlier years, and an increase in nursing-home deaths. The length of stay of nursing-home episodes, particularly Medicare SNF episodes, increased dramatically in 1989 and corresponded to the re-

vised copayment schedule, with a reduction in the proportion of all stays less than 22 days and an increase in the proportion of stays lasting between 22 and 150 days. We observed a large increase in the proportion of episodes in which nursing-home residents shifted their payer source to Medicare from either Medicaid or self-pay. Such payer source transitions were over three times more prevalent in 1989 than in previous years among NHC residents and over 50 percent more common, based upon the less precise but nationally representative Medicare claims data. Although we had expected a decline in the rate of hospital use among nursing-home residents as a result of the MCCA provisions allowing a shift to Medicare payment without a hospital admission, we observed little reduction in hospital use.

The MCCA had three types of effects: those that intensified trends already underway; those that were unequivocally due to the Act; and unanticipated changes that may have been the result of interactions with other MCCA results or policies. We first discuss the findings that may have accelerated ongoing trends.

The relaxed SNF eligibility criteria clearly allowed for a substantial increase in Medicare-covered nursing-home care during the MCCA period. However, the proportion of episodes with SNF-covered days remained high in the post-MCCA period. As a percentage of total Medicare payments, SNF expenditures rose from 1.2 percent in 1988 to 3.0 percent in 1989, leveled off at 1.8 percent in 1990, and increased to 2.1 percent and 2.6 percent during 1991 and 1992 (Health Care Financing Administration 1995). Other factors may have contributed to Medicare's increased role in financing nursing-home care beyond the MCCA period. First, the 1988 clarification of the definition of skilled care under the Medicare SNF benefit may have resulted in more covered services and fewer payment denials by fiscal intermediaries. In addition, OBRA-mandated resident assessments, which went into effect in 1990, required that SNFs provide services to maintain the "highest practicable level of physical, mental, and psychosocial well-being" for residents. The mandated Resident Assessment System may have helped facilities to better document Medicare SNF eligibility and to increase the number of resident days for which they received Medicare reimbursement (Morris, Murphy, and Nonemaker 1995). Finally, having "geared up" to provide Medicare services to a larger proportion of residents because of the MCCA, facilities may have had an incentive to continue providing those services.

Increasing acuity level of nursing-home residents is another trend that followed on the heels of hospital cost-containment initiatives of the mid-1980s (Kahn et al. 1990). We found strong increases during the MCCA period in the use of services like therapies, drugs, and radiology as well as a composite indicator of more intensive ("sicker") services. This phenomenon might be a billing artifact: the "unbundling" of services. Although we do see corresponding increases in the charges for these ancillary services, these changes continue beyond 1989, suggesting that they are part of a trend and not a specific result of the MCCA. This finding is consistent with anecdotal evidence that the mix of services provided to nursing-home residents has become much more complex over the last decade. It also is consistent with the more recent emergence of special care units, which are increasingly common in U.S. nursing facilities (Zinn and Mor 1994). Finally, these data may reflect the early phases of what has been recently characterized as an explosion of subacute and postacute treatment settings that have emerged in response to hospitals' continuing efforts to reduce their lengths of stay (Mor, Banaszak-Holl, and Zinn 1996).

Although the increase in nursing-home mortality is consistent with the trend toward a reduction in hospital deaths (Sager et al. 1989) and the diversification of nursing-home services, including the development of special care units for the terminally ill (Zinn and Mor 1994), MCCA's relaxed SNF eligibility criteria may have attracted a new class of patients: those with a terminal prognosis who were admitted from home. Both the Medicare claims data and the more detailed NHC data confirm that, during the MCCA year, nursing homes were more likely to allow patients to remain in nursing homes to die, and the more detailed NHC data revealed that, during 1989, a greater proportion of patients with feeding tubes were being admitted. The MCCA appeared to have an independent effect, which contributed to the trend favoring the nursing home over the hospital as a site of death.

The MCCA also produced unequivocal effects in several areas. Length of nursing-home stay increased as did admissions of individuals directly from home or another unknown location. For nursing-home episodes with an SNF component, the decrease in the proportion of admissions from a hospital during the MCCA was almost mirrored by an increase in such admissions from home or an unknown location, suggesting not only an increase in admissions directly from home but also payment source changes. This perspective is supported by the highly significant

increase (from 28.7 percent to 40.9 percent) from the pre- to the MCCA period in the proportion of blended episodes (with both SNF and non-SNF days) in which there is a payer source change from non-Medicare to Medicare. This interpretation is borne out in the NHC data, which reveal a threefold increase in the rate of payer source change from Medicaid to Medicare in 1989 relative to the prior year, controlling for a wide array of other factors. We can conclude that it was primarily this increase in conversions—more than the increase in admissions from home—that fueled the overall increase in Medicare-covered nursing-home days during the MCCA.

Finally, we discuss the MCCA's unanticipated changes. We hypothesized that the increase in Medicare-financed SNF stays during the MCCA might be offset by compensating reductions in hospital use among patients already residing in nursing homes. Prior research on this topic has been limited by the fact that it has not been possible to identify Medicare beneficiaries residing in nursing homes. Such prior efforts using national samples relied on only crude measures like reductions in hospitalization rates in local markets. In a county analysis of the impact of the MCCA on hospitalization, Kidder and his colleagues (1991) found no reductions in hospitalization or rehospitalization rates of Medicare beneficiaries during the MCCA year. Because we have defined nursing-home episodes on the basis of Part B claims (using place of service code) as well as Part A SNF claims, for the first time we have been able to test more precisely the "substitution" of SNF care for hospital care under the MCCA. In spite of this increased precision, we still find no evidence that the MCCA resulted in fewer or shorter hospitalizations among nursing-home residents. Although there is a small reduction in the likelihood of being hospitalized during the MCCA period in the midrange length-of-stay groups for SNF residents, there is no overall decrease in the hospitalization rate. Thus, if there was a reduction in the rate of hospitalizations among nursing-home residents during the MCCA, our data suggest that it was minimal and clearly insufficient to offset the increases in SNF days.

There are several possible explanations for this finding. The increase in clinically complex admissions to nursing homes may have counterbalanced possible decreases in the rate of intervening hospitalizations. Although there is a clinical rationale for not hospitalizing a resident who could be transferred to an SNF level of care (Kerr and Byrd 1991), the one-year MCCA period was too brief to change this practice. Re-

search suggesting that the medical resources in a facility have a substantial influence on the rate of hospital use, even controlling for patient mix, speaks to the difficulty of changing clinical practices in settings with limited medical input and a tradition of sending unstable patients to the emergency room (Teresi et al. 1991; Castle and Mor 1996; Fried and Mor 1997).

Another possible explanation was the existence of other provisions in the legislation that *reduced* the financial burden associated with hospital use and that may have counterbalanced the anticipated reductions in hospital days. Although this change in inpatient policy, which reduced the deductible and eliminated copayments and coverage limits, was consistent with the legislative goal of reducing the risk of catastrophic financial losses for beneficiaries, it could have undermined the incentives on which the SNF policy was based and may have masked or diluted any measurable reduction in hospital use by nursing-home residents.

In summary, the MCCA clearly accelerated changes that were underway in the nursing-home industry. Some might argue that the excitement about subacute and postacute care that is sweeping the field today would not have been possible had not the MCCA stimulated the industry to increase its capacity to meet the needs of the traditional Medicare SNF patient. Although we could not measure the impact of the MCCA on the quality of care in nursing homes, research suggests that quality of care is lower in facilities with a high proportion of Medicaid residents (Davis 1991). One could speculate that the higher proportion of Medicare residents (with greater reimbursements) during the MCCA may have led to a general increase in quality of care. The MCCA also enabled the nursing-home industry to play new roles in the provision of care for the terminally ill and for the severely medically compromised—roles in which the lines between acute and long-term care became blurred. These new roles are now being more fully developed in the managed care marketplace, which has the potential to bring about the integration of acute- and long-term-care sectors of the health care industry.

The benefits for Medicare beneficiaries are more difficult to measure. During its brief term, the MCCA increased access to nursing-home care for many and allowed even more beneficiaries who were already in nursing homes to shift expenses from Medicaid or self-pay to Medicare. These gains were short lived. Moreover, we cannot determine whether more days of SNF care improved quality of life for Medicare beneficia-

ries. Future analyses should be able to make use of recently available population-based data derived from the computerization of the Resident Assessment Instrument Minimum Data Set (MDS), which contains detailed information about residents. As longitudinal information from this powerful data set becomes available, much more elaborate, case-mix-adjusted analyses will be possible.

The MCCA was another example of the ad hoc way in which we make health care policy. An improvement over the process of incorporating piecemeal legislative provisions into budget reconciliation bills to meet specific budget targets, the primary goal of this legislation was changing health policy. Budget considerations appeared to be secondary. However, good intentions do not necessarily lead to good policy, and good policy does not always equal good politics. Medicare beneficiaries were left with short-lived reductions in out-of-pocket expenses for nursing-home care and a nursing-home industry that was poised to provide skilled care to a greater segment of the market. We also observed how ad hoc policy making in this complex area can produce unintended consequences, as illustrated by the fact that hospitalization rates for nursing-home residents over the life of the MCCA did not decline despite the revised SNF eligibility criteria.

There are several lessons for lawmakers. The long-term-care sector is clearly assuming an increasingly important role in serving Medicare beneficiaries, whose chronic and acute care needs are becoming more intertwined. We need a coherent policy that recognizes this paradigm of integrated care and that provides incentives for quality care in the most appropriate setting. Although such policies are being developed in the private sector by managed care companies, it is not clear that patients' best interests will be served. As the nation's single largest payer for health care, the federal government should have such a policy. If lawmakers remain silent, the de facto policy in this area will be established by the private sector.

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Address correspondence to: Linda Laliberte, JD, Brown University Center for Gerontology and Health Care Research, 171 Meeting Street, Biomed Center, Room 213, Providence, RI 02912.