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Effects of Multiple Admissions on Nursing Home Use:

Implications for "Front-End" Policies

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EFFECTS OF MULTIPLE ADMISSIONS ON NURSING HOME USE:
Implications for "Front-end" Policies

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ABSTRACT

A recent focus of proposals to expand publicly financed nursing home benefits has been coverage for the initial months of care. This paper presents information from the 1985 National Nursing Home Survey to describe the phenomenon of multiple nursing home admissions and to examine the effects of multiple admissions on the number of individuals who would be fully covered by "front-end" policies. For example, in contrast to an expected 51 percent of admissions that would be fully covered by a 3-month benefit, we estimated that only 39 percent of cases would be fully covered after adjusting for multiple admissions.

I. INTRODUCTION

A recent focus of many proposals for expanding public financing for nursing home care has been the coverage of the initial days, or the "front-end," of nursing home stays. The idea of front-end coverage was first introduced by Robert Ball, the former Commissioner of the Social Security Administration. His proposal was to cover the first six months of nursing home stays for all Medicare beneficiaries and to provide coverage of 12 months for individuals who were married. Most recently, The Pepper Commission proposed to provide total public financing for the first three months of a nursing home stay. The rationale for the coverage of the initial days of nursing home stays is that individuals with relatively short stays are the patients who are most likely to return alive to the community. Public coverage of their relatively brief stays in nursing homes would serve to protect their financial resources so that they would not face financial hardships after discharge from the nursing home. Provisions for additional coverage for married persons are designed to reduce the risk of spousal impoverishment.

The impetus for revising public programs to cover particular portions of of nursing home stays stems largely from the concern over fiscal constraints on expansion of public long-term care financing. The targeting of proposals to the front-end of nursing home stays reflects the recognition, based on research, that the distribution of nursing home stays is highly skewed with many individuals being discharged after a very short time (e.g., three months) while others remain residents for many years (Keeler et al., 1983, Liu and Manton, 1983). Moreover, a higher proportion of individuals with relatively short stays returned to private residences, as opposed to those patients with longer stays who were most likely to remain in nursing homes until death.

Estimates of the number of nursing home residents and the duration of their nursing home use have largely been based on data sources such as the National Nursing Home Survey (NNHS). Until 1985, the NNHS length of stay information consisted only of one isolated stay per nursing home resident. Consequently, if an individual had more than one nursing home stay, those stays could not be linked to analyze patterns of multiple admissions. However, the 1985 NNHS collected information on nursing home "histories", thereby providing an opportunity to refine estimates of the length of stay distribution of nursing home residents. A recent paper by Spence and Wiener (1990) showed, for example, that combining multiple stays into episodes of care had a substantial impact on the average length of stay of nursing home patients.

This paper uses data from the 1985 NNHS to develop further insight into the effects of multiple admissions on the distribution of nursing home patients by length of stay. Our first aim is to present information on patterns of multiple admissions in nursing homes. Our second aim is to demonstrate the importance of accounting for multiple admissions when estimating the number of people who would be affected by front-end policies such as those proposed by former Commissioner Ball and the Pepper Commission. In the following, we first describe the data and methodology used in this analysis. The next three sections describe the histories of multiple admissions and

intervals between stays, the effects of multiple admissions on length of stay distributions, and the relationship between histories of prior admissions and discharge outcomes. In the final section, we present estimates of the size of the aged nursing home population stratified by several different specifications of nursing home stay, including the expected length of stay after multiple stay segments are combined. We employ this information to discuss the importance of incorporating multiple stay information in the assessment of front-end nursing home financing options.

II. DATA AND METHODS

The 1985 National Nursing Home Survey

The 1985 National Nursing Home Survey (NNHS) was conducted by the National Center for Health Statistics to provide nationally representative information on facilities, staff, and residents. Information in the NNHS was collected after cases were selected through a stratified two-stage probability sample design. The first stage was the selection of facilities, and the second stage was the selection of nurses, current residents, and discharged residents from the sample facilities. The results presented in this paper are based on data from the discharge resident component of the NN HS. A sampling list of all persons discharged alive or dead during the 12 months preceding the survey data was compiled. Persons who were discharged more than once during this 12-month period in the same nursing home were listed for each discharge. A sample of six or fewer discharges per facility was selected and data were collected for each sample discharge by interviews with a member of the nursing staff who referred to medical records during the interview. The survey response rate of 95 percent corresponds to a final sample of 6,023 persons (Hing et al., 1989). For each person in the sample, data are available on the sample stay which selected the individual for the survey. This information includes the dates of admission and discharge, as well as demographic characteristics and diagnoses. Although detailed information pertains only to the sample stay, several general questions were also asked regarding other nursing home stays, both in the sample facility as well as in other facilities.

For this analysis, we selected the sample of individuals who were over 65 years of age in 1985. The sample consisted of 5,228 unweighted cases, which represented 1,062,895 persons after sample weights were applied.

Central to this analysis is the "history" of nursing home stays experienced by the discharge sample. Our examination of the information on prior stays indicated that data on other stays in the sample facility were generally reliable. For example, with the exception of a few cases, dates of successive stays were chronologically consistent. In contrast, data on the number and duration of stays in other facilities were inconsistent and missing for most cases. For example, of the 986 residents who indicated that they had a prior stay in a different nursing facility, only 386 had usable information on the dates of such stays. Hence, it was not possible to link intervals of prior stays in other facilities with those in the sample facility. Because of the unreliability of this information, we focused our analysis of nursing home histories on multiple stays in the sample facilities. In addition, histories of other stays refer generally to stays that occurred prior to the sample stay, although in some cases length of stay information was available on stays after the sample stay. Because the discharged resident survey was not designed

to track future nursing home use of individuals who were discharged alive from the sample stay, this information was not directly available on all cases. As a result, only the stays that occurred prior to the sample stay were used in this analysis. Finally, it is important to note that patient characteristics (e.g., diagnosis) available on the survey refer only to the sample stay.

III. HISTORIES OF MULTIPLE NURSING HOME ADMISSIONS

This section examines the histories of prior nursing home use among the individuals in the 1985 NNHS discharge sample. The information in this section refers to nursing home use in the sample facility prior to the sample stay and does not reflect future stays beyond the survey's sample stay.

Distribution of Persons by Multiple Admissions

Table 1 presents the distribution of admissions by the length of the sample stay. About 78 percent of the discharges had only one admission to the sample facility.[1] The remaining 22 percent had multiple admissions, with half of them experiencing only two admissions. By length of sample stay, a smaller proportion of long-stay patients had multiple admissions than either those with short or medium stays. The highest incidence of multiple admissions was found for persons whose sample stays were three months to one year (medium LOS).

Information in Table 1 also shows that the average number of stays per person in the discharge sample was 1.4. Although not shown, the mean number of stays for those who had multiple stays was 3.0. Because most of the individuals in the discharge sample were not discharged dead, they had opportunities for readmissions in the future. Hence, the incidence of multiple admissions in Table 1 underestimates the eventual incidence of multiple admissions for the sample. This bias, due to the limitations of the data, results in underestimates of both lifetime nursing home use and multiple admissions occurring within the episode of illness captured by the sample stay.

Nonetheless, the incidence of multiple admissions that we could estimate from the discharge sample indicates that the occurrence of this phenomenon is substantial. In a later section of this paper, we estimate the extent to which future admissions associated with the sample stay affect the nursing home length-of-stay distribution.

Intervals between Stays

An important question regarding the incidence of multiple admissions is whether or not they represent segments of a single episode of nursing home care that is broken by short intervals, for example, for acute care in hospitals. Alternatively, multiple

[1] Because information on stays in facilities other than the sample facility was incomplete and likely to be very selective, we focused our discussion on utilization history in the sample facilities. Based on the available information from the NNHS, we estimated that the incidence of multiple admissions increases to about one-third of the sample of discharges when the data on use in other facilities are included.

admissions might reflect totally distinct episodes of care, possibly for different conditions. In order to estimate the extent to which these two phenomena occur, we examined the intervals between multiple stays. We would expect that short intervals indicate an extension of the episode captured by the sample stay and that longer intervals are characteristic of discontinuous episodes of care. Because most of the cases with multiple stays had only two, we focused on the intervals of time between the sample stay and the stay immediately preceding the sample stay. These results are presented in Table 2.

For all of the cases with multiple admissions, 59 percent had intervening intervals of less than 14 days and 17 percent had intervals ranging from 15 to 29 days. Thus, it appears likely that for these cases (comprising 75 percent of those who had multiple admissions), the multiple admissions were simply segments of the same episode of care within which the nursing home patient required intervening acute care. In contrast, 13 percent had multiple stays that were broken by more than 180 days (6 months). These cases were likely to reflect the use of nursing home care for specific episodes by individuals whose health status did not otherwise require continuing institutionalization.

Table 2 also presents the distribution of intervals by the duration of the first stay of the pair. The pattern indicates that short-stay patients tend to stay out of nursing homes for a longer time before returning than longer stay patients. For example, 17 percent of the short-stay patients had intervals of 180 or more days, whereas only 9 percent of the long-stay patients had a long break before readmission. This pattern is consistent with prior observation that the more time a person spends in a nursing home, the less likely he is to return to community residence. Although short-stay patients have a greater likelihood of returning to the community after a nursing home stay, the table shows that, like their longer stay counterparts, most short-stay patients have multiple admissions within short periods of time. In fact, the patterns of multiple admissions by types of stays indicates that 20 percent of the multiple admission cases were those with exclusively short stays.

The information in Table 2 does not provide support for the notion that many elderly persons go to nursing homes, return to the community and are then readmitted many months later for a different episode of health care. Although not presented in the table, we also examined the occurrence of long intervals between nursing home stays across all pairs of stays for the persons with multiple admissions. In that analysis, we found that 17 percent of the cases had a long break at some point in their nursing home use history, a result that does not differ notably from that in Table 2.

Because the discharge survey of the NNHS did not continue to follow the future nursing home use of individuals who were discharged alive, we could not measure the proportion of individuals who had only one nursing home stay over their lifetime. Hence, the question of how many persons have only temporary, in contrast to permanent, stays over their lifetime remains a question for future studies.

Multiple Stays by Patient Characteristics

Table 3 presents the effects of specific personal characteristics on the likelihood of histories of readmission. The first column reveals the percentage of cases with multiple admissions for different subgroups by age, sex, marital status, and selected primary diagnoses. The next three columns provide information on the way in which multiple admissions affect the different measures of length of stay. Column 2 presents the median LOS for the sample stay while column 3 presents the median LOS after multiple stays separated by no more than 30 days have been combined. The differences between these measures are presented in column 4.

From Table 1 we know that 22 percent of cases had multiple stays in the same facility, but the likelihood of a history of readmission varies by age, sex, and marital status, and primary diagnosis. The differences by demographic characteristics are not large. Greater differences are seen among the subgroups by primary diagnosis at admission. For example, only 13 percent of individuals with dementia had histories of multiple admissions, whereas 29 percent of persons with lung disease had histories of multiple admissions. These results reflect the tendency of dementia patients to be admitted for long stays with relatively few acute-care needs requiring hospitalization. In contrast, persons with lung disease tend to be more susceptible to acute illness and therefore more likely to require hospitalization. Finally, because episodes of illness in a nursing home are often interrupted by hospital stays, it is not surprising that individuals admitted from hospitals had considerably higher risks (30%) of histories of readmission than those admitted from other locations.

Table 3 also shows major differences in the effect of multiple admissions on the cumulative length of nursing home stays. By age--although the median sample stay of the 65-74 age group (74 days) is about 22 days shorter than that of the 85+ age group (96 days)--the difference increases to 51 days after adjusting for multiple stays. This difference reflects in part the higher incidence of multiple admissions among the 85+ group. Similarly, while females and non-married persons tend to have longer lengths of stay than their counterparts when sample stays were compared, adjustment for multiple admissions further increases the differences.

For specific diagnoses, the effects of multiple admissions on length of stay are dramatic. The largest effect is seen for persons with lung diseases. Whereas the sample LOS is 66 days, combining stays broken by less than 30 days increases the LOS to 114 days, a 73 percent increase. In contrast, patients with hip fracture show only an 18 percent increase in median cumulative stays when multiple segments are combined. This reflects in large part the short additional stays of these patients (column 1). Persons with neoplasm have relatively low risks of multiple admissions as well as short durations of stay even after multiples are combined. Half of these cancer patients would have stays of less than 36 days regardless of whether nursing home use were measured by single stays or multiple stays.

By source of admissions, histories of multiple stays increased the median stays by 60 percent for persons admitted from hospitals. Nevertheless, these patients tend to have shorter stays overall as compared to those admitted from the community.

The results in Table 3 show that the nursing home population is heterogeneous in terms of its histories of multiple admissions. For the most part, however, the patterns of length of stay by patient characteristics tend to reflect those observed for single stays. For example, cancer patients have relatively short durations of nursing home use whether we are comparing simple stays or cumulative durations in an episode.

IV. DISCHARGE OUTCOMES

In this section, we examine the relationship between multiple admissions and outcomes, with the expectation that knowing about the presence of multiple admissions can refine our estimates of expected discharge outcomes beyond those observed for subgroups of the population by single stays alone (Liu and Manton, 1984). Table 4 presents the the percentage distribution of discharge outcomes by type of sample stay and whether or not multiple admissions were experienced.

Of the short-stay group with no prior stays, 33 percent were nursing home deaths and 35 percent were discharged alive to a private residence.[2] This pattern illustrates the fact that nursing homes are often used for short-term terminal care and for post-acute rehabilitation. A relatively small proportion, 19.6 percent, of this group was discharged to a hospital. The next row presents the pattern for short-stay patients who had a prior stay that was less than 30 days, and shows that individuals with multiple short stays in nursing homes have similar outcome patterns to those with only a single short stay. The pattern is considerably different, however, when a short stay follows a relatively longer stay in a nursing home (i.e., more than 30 days). In this case, more than 80 percent of the sample stays resulted either in death or in a discharge to the hospital.

The medium-stay group has a lower proportion returning to community residence than the short-stay group. The most notable effect of multiple admissions on this group is that persons with multiple admissions have a 50 percent higher likelihood of being discharged to a hospital.

For the long-stay patients with single stays, the most common outcome was death (57.1 percent). Another 27.2 percent were discharged to hospitals, and only 6.2 percent were discharged to private residences. Our finding here indicates that individuals with minimum stays of one year have a negligible chance of returning to a private residence. Long-stay patients with multiple admissions have a lower chance of being discharged dead than those with only a single stay. Instead, they are discharged to hospitals.

Table 4 highlights several key relationships. First, as length of stay increases, regardless of whether it is a long single stay or an accumulation of multiple stays, the likelihood of returning to private residence decreases. About 5 percent of persons with stays longer than one year return to the community. Second, the occurrence of multiple stays, regardless of their length, increases the likelihood of discharge to hospitals.

[2] We included persons who were known to have died in a hospital after discharge from the nursing home. This decision rule reduces the percentage of patients who were classified as being discharged to the hospital.

Finally, the results in Table 4 reflect the three general types of nursing home patients: short-term terminal care patients, short-term rehabilitation patients, and long-term care patients. The long-term care patients appear to be divided between those who require extensive acute care (e.g., those with multiple admissions and discharge to hospital) and those who are simply long-stay patients who die in nursing homes.

V. MULTIPLE ADMISSIONS AND PAYMENT SOURCES

Unlike acute-care services, most nursing home care is not financed by either Medicare or private long-term care insurance. Individuals who enter nursing homes are required to pay first dollar for care until their personal resources are depleted, at which point they have "spent down" and become eligible for Medicaid payment. Individuals who are indigent before entering nursing homes are Medicaid eligible at the time of admission. Because of the process of paying for nursing home care, the more time an individual spends in a nursing home, the more likely he is to become a Medicaid patient. For this reason, histories of multiple admissions are likely to affect the pattern of payment sources.

Table 5 presents the distribution of cases by type of sample stay and duration of prior stays. Among the short-stay patients with no prior stays in the same facility, 23 percent were Medicare and 52 percent were private pay throughout their stays. Only 24 percent were Medicaid at admission and less than 1 percent spent down to Medicaid. In contrast, for persons with a prior stay, the proportion private pay decreases and the proportion Medicaid increases.

Because Medicare coverage is limited to 100 days, it plays a much smaller role for medium- and long-stay patients. Private payment was still half of all medium-stay patients, and Medicaid admissions comprised 43 percent of the cases. In comparison to the short-stay patients, the Medicaid spend-down cases become a more prominent type of patient. For medium-stay patients with prior admissions, the proportion private was only 31-39 percent while Medicaid admissions were 39-63 percent of the patients. For the long-stay admissions, histories of multiple admissions were also associated with a higher proportion of patients who were Medicaid eligible at admission to the sample stay.

Table 5 supports the hypothesis that having had prior nursing home stays increases the likelihood that a person would be eligible for Medicaid at admission. However, the NN HS data on primary payment sources at admission and discharge are available only for the sample stay. As a result, it is not surprising that spend-down cases are observed in disproportionately high numbers for single stay residents, regardless of past nursing home use. Table 5 also shows that the proportion of Medicaid admissions increases in the subsets of the population who had prior nursing home stays. For example, approximately 70 percent of the long stay patients who had prior nursing home stays were Medicaid eligible upon admission to the sample stay as opposed to only 48 percent of the long stay patients who had no prior nursing home history. Thus, it is reasonable to assume that not all of these patients were eligible for Medicaid at the

time of their first nursing home admission and that a substantial proportion of those Medicaid admissions must have spent-down to Medicaid at some point during their past nursing home use. Unfortunately, the data do not allow us to ascertain the exact point at which the resident became eligible for Medicaid; other data sources are required to fully explicate the relationship between spend-down and length of stay.

VI. IMPLICATIONS OF MULTIPLE STAYS FOR FRONT-END POLICIES

The preceding sections presented direct information from the NNHS on the incidence and effects of multiple nursing home admissions. As we noted above, limitations of the NNHS do not allow us to fully capture the incidence of multiple admissions, either from the perspective of lifetime nursing home use or for the episode of illness surrounding the sample stay. There are two types of limitations. First, information on past nursing home use outside of the sample facilities was inconsistent and often missing. Second, information on future use of nursing homes after the sample stay was not generally available. Both of these restrictions result in underestimates of the incidence of multiple admissions. Because of multiple stays, it is certain that the length-of-stay distribution based on sample stays underestimates the episode distribution that is obtained after incorporating multiple stay information.

To estimate the impact of various front-end policies, we used the data from NNHS to simulate the episode distribution of the sample of discharges. The results of the simulation will permit us to compare the number of individuals that would be fully covered based on episodes of care adjusted for multiple stays in contrast to those covered based on observed sample stays only. The former will be a more accurate estimate of policy impact.

The weighted NNHS discharge survey sample approximates a nationally representative sample of admissions to nursing homes in a given year. Although there will be other patients using nursing homes during the year, they would be highly representative of very-long-stay patients for whom the "front-end" policies will not apply.

The general strategy in this simulation is to estimate the likelihood that an individual who was discharged alive would be readmitted in the same episode in the future and how the additional segment would shift his classification by length of stay. For simulating the likelihood of future admissions, we combined estimates on two groups of patients. The first group was composed of individuals who were discharged from the sample facility directly to another nursing home. Thus, we know with certainty that all persons in this group experienced another nursing home admission after the sample stay discharge. The second group consisted of all other live discharges from the sample stay facility. Although we can not ascertain the exact number from this group who will be readmitted, it seems reasonable to assume that a certain percentage of these live discharges will experience another stay in the sample facility. In order to obtain that proportion, we calculated the ratio of individuals in the sample stay who had prior stays to individuals in the sample stay who were discharged alive but not to

another nursing home.[3] This ratio was then applied to the number of live discharges (that did not go directly to another nursing facility) to estimate the number of persons with expected readmission to the sample facility. The two groups of patients with readmissions (to the same or different nursing home) were then compared to all live discharges. In this way, we estimated that 41 percent of those discharged alive would be readmitted within 30 days and that 50 percent would be readmitted if the timing of the readmission were not constrained.

To estimate the distribution of the adjusted stays, we used information on the cases with histories of at least two admissions including the sample stay. The prior stay was viewed as the initiating event to estimate the proportion who had a subsequent stay of a specified duration. Specifically, four length-of-stay categories were defined: (a) less than 90 days; (b) 90 days to 180 days; (c) 180 days to 365 days; and (d) greater than 365 days. For the prior stays with a specified duration (e.g., less than 90 days), we derived the length-of-stay distribution of subsequent stays according to the same four categories. The hypothetical future stay distribution was then used to adjust the prior stay distribution to derive estimates of the ultimate episode adjusted distribution.[4] Finally, this episode adjusted distribution was applied to the number of sample-stay cases that were discharged alive and therefore at risk of readmission. The final episode durations represent the expected stay if we could observe not only the sample stay and past nursing home history but also the future readmissions.

Table 6 presents the results of the simulation. The first column shows the distribution of stays for the observed sample stay. The second column presents the adjusted episode when only prior stays not separated by more than 30 days are added to the sample stay. The third column presents the expected duration if both prior stays and an additional future stay separated by less than 30 days from the sample stay are added to the sample stay. The fourth column presents the expected distribution if prior stays and an additional future stay unconditional on the interval are added to the sample stay.

Table 6 shows that 51 percent of the patients had stays of less than 90 days if only the sample stay were considered. The implication for front-end policies, such as that recommended by the Pepper Commission, is that approximately half of the persons who enter nursing homes in the year may be fully covered for their nursing home stay if public financing is expanded to cover the first three months of nursing home care.

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[3] The calculation of this ratio is based on the assumption that the number of sample stay cases with a prior stay is a reasonable approximation of the number of individuals from any (in this case, the prior stay) cohort who were eventually readmitted to the same nursing home.

[4] There are two important assumptions which made it possible to simulate the effect of expected future stays on the length of stay distribution. The first assumption is that the proportion of live discharges discussed above is the same across each initial length of stay category; that is, the same readmission rate is assumed for each live discharge regardless of prior length of stay. Second, we assume that the distribution of the future stays of the residents who were discharged directly to another nursing facility was the same as the future stay distribution of discharges who were readmitted to the sample facility. This assumption was necessary because the NNHS provides no information on the duration of stays in facilities other than the sample facility.

Similarly, under the Ball proposal, almost 63 percent of the admissions would be fully covered if Medicare provided benefits for the first six months of nursing home care.

Although a front-end policy would provide some specified period of coverage for all nursing home admissions in a year, Table 6 also shows that smaller proportions of cases would be fully covered if adjustments are made for multiple admissions. Adjusting only for prior stays, we see that 45 percent would be fully covered by a three-month front-end policy. If we adjusted for expected future stays as well, only 39 percent would be fully covered by the three-month policy. Hence, relative to the estimated 51 percent of admissions that was based on sample stays alone, the adjustment for multiple admissions indicates that 25 percent fewer persons would be fully covered by the three-month front-end policy.

Table 6 shows relatively consistent proportions of persons with stays of between 90 and 180 days (11-12 percent) and stays of between 180 and 365 days (11-13 percent), regardless of adjustments for prior and future stays. Hence, the major differences in number of persons who would be covered under different options for front-end coverage are due to differences in the first three-month interval. To the extent that the rationale for specific front-end policies depends upon the number of persons fully covered, Table 6 provides a basis for estimating the incremental effects of extending coverage beyond 90 days to 360 days. As we noted above, persons who remain in the nursing home for more than a year are unlikely to return to private residence in the community. These persons would not, in general, be the targeted beneficiaries of front-end policies. Moreover, the high proportion of such persons after adjustments are made for multiple admissions (i.e., 37 percent) indicates that the effects of longer term nursing home coverage policies need to be reevaluated in light of the prevalence of multiple admissions.

The implications of the multiple admissions for front-end coverage policies are important if the policies are specified in terms of total nursing home use during a "spell of illness." The Ball proposal to cover the first six months of nursing home stays, for example, would presumably be a spell of illness policy. Hence, the distribution of length of stay by sample stay indicates that 63 percent of episodes would be covered completely by the Ball proposal. In contrast, the episode adjusted distribution of stays would suggest that only 51 percent of stays would be covered.

If the front-end policies were to specify that coverage would be provided for a certain number of months per admission, the stay patterns would be the most useful in determining how many persons would be fully covered. Our purpose in illustrating the effects of multiple admissions was to estimate the number of persons who would be fully covered under different options. Perhaps more importantly, the simulation demonstrates that it is essential for future legislative proposals to specify whether eligibility for coverage under a front-end policy is based upon spells of illness or some other length of stay measure (e.g. each admission, calendar year).

VII. DISCUSSION

This paper presented an analysis of multiple nursing home admissions using data from the 1985 NNHS. The first sections of the paper discussed results that were derived directly from the data. These sections were presented to describe the incidence and effects of multiple admissions. The final section presented simulated results to highlight the importance of adjusting for multiple admissions in the consideration of front-end options. The direct information from the NNHS and the simulation results provide insights into the nature of multiple nursing home admissions. This is important for the consideration of further research as well as policy options.

The occurrence of multiple nursing home admissions is quite common. Although our analysis indicated that only 22 percent of the discharges had prior stays in the same nursing home, initial analysis of prior stays in the sample and other nursing homes indicated that approximately 33 percent of the discharges had experienced prior nursing home use. For individuals who were discharged alive from the sample stay, we estimated that quite a few would be at risk of a future nursing home stay. Combining prior use with expected future use, it is plausible that about half of the patients in the discharge sample would ultimately experience multiple nursing home admissions. This result would be consistent with findings from analyses of nursing home patients in Connecticut (Gruenberg et al., 1989; Liu and Manton, 1990) and California (Lewis et al., 1985). Collectively, these results suggest that every other nursing home patient can be expected to have at least two admissions over his lifetime.

Although we focused on durations of stay in nursing homes, data on the durations of intervals between nursing home stays are also important for policy formulation, particularly in light of the high incidence of multiple admissions. Along with specification of periods of coverage, further specification is required regarding the role of intervals between stays. For example, does a policy to cover the first six months of nursing home stays apply to the first six months of lifetime nursing home use even though an initial stay of three months may have occurred a year before any additional nursing home use is required? Similarly, how would intervals between stays be counted in terms of deductible or elimination periods if initial private payments are required before public or private insurance policies begin coverage? The importance of intervals between multiple stays appears to be most important when policies are specified in terms of "spells of illness."

A particular pattern of multiple admissions requires attention because of its frequent occurrence. These are the short-stay nursing home admissions with intervening hospital stays. For example, data from the NNHS indicated that one-third of persons who were admitted from hospital were likely to have had a prior nursing home admission. In contrast, only 12 percent of those admitted directly from the community experienced a prior nursing home stay. In addition to the association with prior hospital admission, short-stay patients were also linked with diagnoses such as hip fracture, lung disease, stroke, and cancer. All of these characteristics are frequently associated

with eligibility for the Medicare SNF benefit. The incidence of multiple admissions is therefore important in the consideration of the adequacy of the Medicare SNF coverage for a maximum of 100 days per spell of illness. Further analysis is required to determine the extent to which beneficiaries exceed nursing home use of 100 days because of multiple admissions. It is interesting to note that this question would have been less relevant if benefits were specified on a calendar year basis, as they were under the 1988 Medicare Catastrophic Coverage Act.

Although data limitations preclude a more thorough analysis of the relationship between length of stay measures and payment sources for nursing home care, we did find that long durations of nursing home use were associated with greater likelihood of having Medicaid as a payment source. Our analysis of multiple admissions indicated that if a person had a prior stay which exceeded 30 days, the individual had a 58 percent chance of being a Medicaid patient at admission to the sample stay. This can be contrasted to short-stay patients with no prior stay history who had a 24 percent chance of being a Medicaid patient. Our payment source analysis also found that about one quarter of the patients would be private pay even if they had long sample stays and prior stays. Until other data become available to better describe the payment source and nursing home use relationships, these results provide a benchmark for estimating the distribution of nursing home discharges by payment source after accounting for multiple admissions.

The simulation of the number of people who would be affected by "front-end" coverage options was presented to highlight the importance of multiple admissions for a particularly attractive set of options. We found that individuals with relatively short stays have higher than average chances of returning alive to community. Because of the high per diem costs of nursing home care, the results suggest that even short stays can be an excessive financial burden for many persons who are only temporary nursing home residents. Finally, the results of the simulation highlight the importance not only of measuring length of stay to estimate effects of policies, but also of choosing the appropriate measure of length of stay with which to address policies.

In conclusion, the common occurrence of multiple nursing home admissions implies that public policy proposals to expand coverage of nursing home care must specify how multiple stays would be addressed in the consideration of benefit periods as well as periods when coverage is not available. Although information on multiple admissions is most important to policies oriented toward short benefit periods, such as the front-end policies, the accumulation of stays over time also has important implications for long-stay policies. Needless to say, the occurrence of multiple admissions has similarly important implications for private long-term care insurance policies and how their provisions are specified.

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TABLE 1: Multiple Admissions among the Nursing Home Discharges in 1985 (weighted)						
LOS Category of Sample Stay	N Cases	Number of Admissions				Average Number per Person
		1	2	3	4	
Short (< 90 days)	545,607	78.5%	11.0%	5.2%	5.2%	1.44
Medium (90-364 days)	238,968	70.9	15.3	7.4	6.4	1.57
Long (≥ 365 days)	275,647	81.1	11.2	4.4	3.3	1.34
All	1,060,222	77.5	12.0	5.5	5.0	1.44

TABLE 2: Distribution of Intervals between Nursing Home Stays: Sample Stay and Immediate Prior Stay (weighted)					
Length of Immediate Prior Stay	N	Interval Between Stays			
		< 14 Days	15-29 Days	30-179 Days	> 180 Days
Short (< 90 days)	117,005	51.5	16.8	14.5	17.2
Medium (90-364 days)	60,386	63.5	15.1	11.3	10.2
Long (≥ 365 days)	61,737	68.0	17.4	5.5	9.1
All	239,128	58.8	16.5	11.4	13.3

TABLE 3: Percentage with Multiple and Effects of Multiples on LOS, by Selected Characteristics				
Characteristic	Percentage with Multiples	Sample Stay LOS	Episode-Adjusted LOS*	Percentage Difference
AGE				
65-74	17.6%	74	102	37.8%
75-84	23.0	76	107	40.8
85+	24.9	96	153	59.4
SEX				
Male	20.7	65	88	35.4
Female	23.5	92	143	55.4
MARITAL STATUS				
Married	19.4	45	61	35.6
Not Married	23.6	101	152	50.5
PRIMARY DIAGNOSIS				
Neoplasm	15.1	31	36	16.1
Dementia	13.4	204	266	30.4
Mental Disorders	19.4	228	284	24.6
Ischemic/Circulatory	20.0	169	243	43.8
Stroke	16.1	82	88	7.3
Lung	28.9	66	114	72.7
Musculoskeletal	20.5	80	114	42.5
Hip Fracture	15.7	57	67	17.5
ADMITTED FROM				
Hospital	30.4	58	93	60.3
Community	12.2	127	145	14.2
Other	11.9	205	231	12.7
* Where stay is defined as continuous if not broken by > 30-day interval.				

TABLE 4: Discharge Outcome by Type of Sample Stay and History of Multiples					
Type of Sample Stay	**Type of Prior Stay**	**Death**	**Private**	**Hospital**	**Other**
Short (< 90 days)	Single (none)	32.9	35.0	19.6	12.6
	< 30 days	33.7	37.4	21.4	7.5
	≥ 30 days	40.5	13.7	40.3	5.5
Medium (90-364 days)	Single (none)	39.1	17.9	29.0	14.0
	< 30 days	33.2	12.3	42.4	12.1
	≥ 30 days	37.2	9.0	46.5	7.3
Long (≥ 365 days)	Single (none)	57.1	6.2	27.2	9.6
	< 30 days	36.3	2.6	54.8	6.3
	≥ 30 days	42.8	4.8	44.7	7.7
All	Single (none)	40.8	23.6	23.6	12.0
	< 30 days	33.9	27.1	30.5	8.5
	≥ 30 days	40.1	10.0	43.3	6.6

TABLE 5: Payment Source by Type of Sample Stay and History of Multiples					
Type of Sample Stay	**Type of Prior Stay**	**Medicare (Admits Only)**	**Private**	**Medicaid**	**Spend-Down**
Short (< 90 days)	Single (none)	23.3	51.6	24.3	0.9
	< 30 days	14.9	51.9	32.4	0.8
	≥ 30 days	11.2	40.9	46.7	1.2
Medium (90-364 days)	Single (none)	2.5	48.3	42.6	6.6
	< 30 days	13.5	38.7	38.8	9.1
	≥ 30 days	2.7	31.2	62.8	3.4
Long (≥ 365 days)	Single (none)	0.5	39.6	48.3	11.6
	< 30 days	1.5	24.3	67.4	6.8
	≥ 30 days	1.4	23.8	70.3	4.5
All	Single (none)	12.8	47.7	34.6	5.0
	< 30 days	13.0	45.4	38.2	3.5
	≥ 30 days	6.1	33.5	57.7	2.7

TABLE 6: Comparison of Observed and Simulated Stays				
Length-of-Stay Classification	**Sample Stay**	**Episode-Adjusted LOS**	**Episode-Adjusted Future I***	**Episode-Adjusted Future II****
< 90 Days	546,767 (51.4)	483,539 (45.5)	411,417 (38.7)	395,001 (37.2)
90 - < 180 Days	119,312 (11.2)	113,906 (10.7)	125,874 (11.8)	128,629 (12.1)
180 - < 365 Days	120,258 (11.3)	117,448 (11.0)	135,276 (12.7)	139,341 (13.1)
≥ 365 Days	276,558 (26.0)	348,001 (32.7)	390,331 (36.7)	399,926 (37.6)
* Episode adjusted for future stays which occur within 30 days. ** Episode adjusted for future stays, not conditional upon length of interval.				

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