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Home Health Independence Patients: High Use, but Not Financial Outliers

Final Report

March 31, 2010

Valerie Cheh
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Programmer
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MATHEMATICA
Policy Research, Inc.

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EXECUTIVE SUMMARY

Under Section 702 of the Medicare Prescription Drug, Improvement, and Modernization Act of 2002 (P.L. 108-173) Congress mandated that the Secretary of the Department of Health and Human Services undertake a demonstration of a change to the Medicare home health benefit eligibility criteria regarding homebound status. Under current Medicare regulations, home health recipients must meet the statutory definition of being homebound in order to receive home health benefits. The Home Health Independence Demonstration was designed to test whether eliminating the homebound requirement for ill, permanently disabled beneficiaries would improve access to care and have a substantial effect on Medicare costs. Enrollment in the demonstration enabled these beneficiaries to leave their homes more frequently and for longer periods than the current regulations allow, without risking loss of their Medicare home health benefits.

The demonstration enrolled few participants. A number of factors contributed to the low enrollment, including the stringent enrollment criteria, limited interest in the program from beneficiaries, and limited interest in the program from home health agencies (Cheh et al. 2007).

A key reason that agencies chose not to participate was that they anticipated that the typical demonstration patient would require a great deal of care, and that under Medicare's prospective payment system the agency would lose money on these patients. Under the home health PPS system Medicare reimburses home health agencies a set amount for each episode of care, and agencies can incur a financial loss if the cost of care is higher than this predetermined level.

CMS' outlier payment policy is designed to mitigate the largest financial losses for home health agencies. For each home health episode, CMS establishes an outlier threshold amount that is equal to the case-mix-adjusted episode payment amount plus a fixed dollar loss amount, and the agency shares in the losses above this amount. This outlier payment approach makes it more feasible for agencies to provide outlier services because they can recoup some of their losses on episodes that are unusually costly.

In recent years, the total amount of outlier payments, and the proportion of episodes qualifying for outlier payments, has been increasing, suggesting agencies are taking in high-cost patients.[1] What is not understood is the relationship between the beneficiaries who were targeted by the demonstration and those who are covered by the outlier payments. The goal of this report is to understand the relationships among the proxy demonstration target group (ill, disabled beneficiaries), patients who receive outlier payments, and the agencies that serve them.

A. Data and Analysis

The 2005 CMS Datalink files and home health cost reports are the main data sources for this report. We selected the year 2005 because it is one of the most recent years in the Datalink files and it corresponds to a full year of the demonstration. The Datalink files are episode-level data

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[1] One reason cited for the increase in outlier claims is an increase level in fraud and abuse in certain areas of the country. In this study, we excluded states where the fraud and abuse was thought to be the most prevalent.

files for each payment episode found in the Medicare National Claims History file and contain 100 percent of all the fee-for-service Medicare claims, and are linked with Outcome and Assessment Information Set (OASIS) records, as well as information from the Provider of Service File, the Area Resource File, the Enrollment Data Base File, the Group Health File, and Part A inpatient data. We linked this data with the home health cost reports, which are submitted annually, so we could obtain information on the agencies' costs per visit.

To compare the characteristics of the beneficiaries who would qualify for the Home Health Independence Demonstration with those who receive outlier payments, we defined four mutually exclusive patient groups: patients who appear to qualify for the demonstration (proxy demonstration beneficiaries), patients who had an episode of care that qualified for an outlier payment, patients who both appear to qualify for the demonstration and had an outlier payment, and those who qualify for neither. We then identified the Medicare home health beneficiaries who met the criteria for the different groups and compared their characteristics and home care utilization.

To understand the types of agencies that serve these high-use beneficiaries, we identified those agencies that served a disproportionately high percentage of proxy-demonstration beneficiaries, and a disproportionately high percentage of financial outlier patients, and compared the characteristics of these agencies who did not serve a high proportion of such patients.

B. Results

1. Beneficiaries

Proxy beneficiaries—those who by definition are sick and permanently disabled—were about 13 percent of the total home health patients in our study population. Of those, about 7 percent were financial outliers as well. As we found in the demonstration, a substantial proportion of these beneficiaries were near the end of their lives and dying while in home health. By definition, their physical functioning was limited, which led to a higher probability for pressure ulcers. They were also more cognitively impaired, and were more likely to have home and social support. (These later results are more exploratory due to missing data issues.)

Beneficiaries who were both proxy demonstration patients and financial outliers used the most home health services; they received nearly 4 times as many visits as "all other" home health patients (who were not proxy demonstration patients or outlier cases). The majority of the proxy demonstration patients – those that were not financial outliers – received about 70 percent more visits than all other home health beneficiaries. Thus, the proxy demonstration patients did have high utilization relative to the majority of home health patients, although they did not met the financial outlier threshold.

Financial outlier patients were about 3 percent of the population, and 36 percent were also proxy demonstration patients. Those who were financial outliers only, however, seemed unique. Relative to all other home care beneficiaries, they were (1) functionally more independent; (2) more likely to live on their own and have a paid primary caregiver; and (3) more likely to have surgical wounds that required care, although they had many of the same conditions as other patients. We had a fewer missing values among these patients than among the proxy

demonstration patients; but we still note that because of the missing values, these results are more explanatory than conclusive.

The financial outliers also used a large number of home health services, with the average number of visits being almost three times greater than that received by all other home health patients. This high utilization was driven by a greater number of skilled nursing visits (40 visits versus 7) and home health aide visits (11 versus 2); but other disciplines were also higher. Although skilled nursing visits and home health aide visits were higher for the outlier patients, the outliers' actual multiple for nursing services was somewhat lower than the 40 to 7 ratio, as the average length of a skilled nursing visit was approximately 20 percent shorter than those provided to all other home health recipients. In contrast, the average length of a home health aide visit was 30 percent longer (87 versus 67 minutes); while the length of therapy and medical social worker visits varied little.

2.   Agencies

We found substantial differences between agencies that provided care to a disproportionate share of financial outlier patients and other agencies. The overall distribution of financial outlier patients was more concentrated in particular agencies and these agencies had a number of unique characteristics. In particular, these agencies served fewer Medicare patients in 2005, were more likely to be located in a metropolitan county, and were much less likely to operate a hospice, suggesting these agencies might be more focused (or niche) providers. Furthermore, these agencies provided on average more skilled nursing and home health aide visits per episode. Perhaps more importantly, with 35 percent lower costs for skilled nursing visits, these agencies are in a better position to make up some of the financial loss that they incur for financial outlier patients, as the financial outlier payment formula rewards agencies that incur relatively lower per-visit costs. Agencies that provide care to a high percentage of proxy demonstration patients were also different from Medicare home health providers that do not provide large amounts of such care. But the proxy demonstration patients are not as concentrated among these agencies; hence the differences were not nearly as stark.

C.   Lessons Learned

Lesson One: Only a small fraction of proxy demonstration patients generate outlier payments. The comparison of proxy demonstration beneficiaries and those who incurred a financial outlier episode suggested that approximately 7 percent of the proxy demonstration patients were also financial outliers. Although this 7 percent is higher than the corresponding proportion among the nondemonstration beneficiaries (of whom only 2 percent of the beneficiaries were financial outliers), they remain a small minority of the outlier patients.

Lesson Two: Financial outliers include functionally independent patients who use more resources than the permanently disabled population. Although home health agencies consider proxy demonstration patients to be high-use patients, other groups of patients are even more expensive, on average. The proxy demonstration patients received more home health care than the nondisabled, nonoutlier beneficiary population that makes up the majority of the home health population. But financial outliers who were not proxy demonstration patients exhibited even higher utilization. The patients were more likely to be functionally and cognitively independent; live on their own; be recovering from a surgical wound; receive shorter, more frequent nursing visits; and receive longer, more frequent home health aide visits. Differences between the proxy

demonstration and outlier patient groups examined in this study suggest that outlier payments are not generally being used to serve the types of severely, permanently disabled beneficiaries that were addressed by the demonstration concept.

Lesson Three: Agencies that serve a disproportionate share of outlier patients have atypical characteristics. The agencies that served a disproportionate share of financial outlier patients had different characteristics and practice patterns than other agencies. These agencies were more likely to be in urban areas, serve relatively few Medicare home health patients, have no association with a hospice, have low costs per visit for skilled nursing and home health aide services, and generally provided a high level of skilled nursing and home health aide care to their patients. We cannot tell what accounts for this factor—that is, whether the agencies adopted their home health operations so they could fill these patient needs or whether the agencies have particular ways of providing care that leads to the patient receiving relatively high levels of care. However, their characteristics suggest that providing care to outlier patients might be a strategic decision on the agencies' part.

D. Limitations

This study has two important limitations. First, it uses administrative data that is collected for payment and quality monitoring purposes. As a result, not all of the variables of interest are collected at each assessment, and we missed a substantial part of some variables for the longest staying patients—whose home care spell of illness began years before the study period. Even if we were to go back to those initial assessment to "fill in" the gaps, the long time lag would raise questions about its accuracy, for over number of years functioning, caregivers and housing arrangements can and do change. However, it highlights the limitations of the data for use in comparing long-staying patients with those who are temporarily receiving home health services at a given point of time.

Second, this study only includes patients who were admitted to Medicare home health care. If the results suggested here—that financial outlier patients are served by particular "niche" agencies—then we may not observe outlier patients in areas where these agencies do not serve patients. As noted earlier; we do not know whether this is an issue; as we do not know if these agencies evolved to serve the patients who are there; or if the patients care is the result of the agency's practice pattern. Nevertheless, it suggests that there may be more "potential" financial outlier patients that have different characteristics that we observed here.

I. OVERVIEW

A. Policy Background

Under Section 702 of the Medicare Prescription Drug, Improvement, and Modernization Act of 2002 (P.L. 108-173) Congress mandated that the Secretary of the Department of Health and Human Services undertake a demonstration of a change to the Medicare home health benefit eligibility criteria regarding homebound status. Under current Medicare regulations, home health recipients must meet the statutory definition of being homebound in order to receive home health benefits. The Home Health Independence Demonstration was designed to test whether eliminating the homebound requirement for ill, permanently disabled beneficiaries would have a substantial effect on Medicare costs. Enrollment in the demonstration enabled these beneficiaries to leave their homes more frequently and for longer periods than the current regulations allow, without risking loss of their Medicare home health benefits. Congress defined the group eligible for the demonstration as beneficiaries who

- Have been certified by a physician as an individual who has a permanent and severe disabling condition that is not expected to improve
- Are permanently dependent upon assistance from another individual with at least three of the five activities of daily living (ADLs) (eating, toileting, transferring, bathing, and dressing)
- Require permanent skilled nursing services and the skilled nursing is more than medication management
- Require an attendant to visit the beneficiary on a daily basis to monitor and treat the beneficiary's medical condition or to assist the beneficiary with ADLs
- Require technological assistance or the assistance of another person to leave the home
- Do not regularly work in a paid full-time or part-time position outside the home

These criteria were developed to identify severely ill, chronically disabled people who had a difficult time accessing health care and hence would not be using Medicare home health benefit inappropriately. The target group was people who might have been in a nursing home, or at least

would have been confined to their homes, were it not for technological advances that enabled them to live at home and gain limited mobility (Cheh et al. 2007).

The demonstration enrolled few participants. A number of factors contributed to the low enrollment, including the stringent enrollment criteria, limited interest in the program from beneficiaries, and limited interest in the program from home health agencies (Cheh et al. 2007).

A key reason that agencies chose not to participate was that they anticipated that the typical demonstration patient would require a great deal of care, and that under Medicare's prospective payment system the agency would lose money on these patients. Under the home health PPS system Medicare reimburses home health agencies a set amount for each patient for each 60-day period, depending upon the patient's case-mix category.[1] Agencies incur a financial loss if the cost of care is higher than this predetermined level. The case-mix adjustment mechanism and the outlier policy of the Centers for Medicare & Medicaid Services (CMS) are designed to limit (but not eliminate) provider risk.

CMS' outlier payment policy is designed to mitigate the largest financial losses for home health agencies. For each 60-day home health episode, CMS establishes an outlier threshold amount that is equal to the case-mix-adjusted episode payment amount plus a fixed dollar loss amount.[2] The fixed dollar loss amount is the same for all episodes and is equal to the fixed dollar loss (FDL) ratio (set each year) multiplied by the episode rate. (See Appendix A for details on the outlier payment system.) For 2010, the FDL ratio is 0.67.

This outlier payment approach makes it more feasible for agencies to provide outlier services because they can recoup some of their losses on episodes that are unusually costly.

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[1] Payment episodes are defined as 60-day periods of care. If a patient still requires care at the end of the 60 days, a new episode begins on the 61st day

[2] For certain episodes, the partial episode payment (PEP) adjustment amount may be used.

Agencies with low per-visit costs could, in theory, actually profit under the outlier payment policy. Meadow (undated) found that the probability of an outlier episode occurring was positively associated with lower agency per-visit costs.

An important feature of the outlier payment policy is that Congress limited the amount of outlier payments to only 5 percent of total Medicare home health payments. If expected outlier payments exceed the 5 percent level, then CMS may adjust either the fixed dollar loss amount used to calculate the outlier payment or the proportion of the loss that it covers.

For the 2010 rulemaking, CMS performed analysis that indicated that outlier payments were growing. As a result, it instituted an outlier cap policy, which limited the amount of outlier payments for any one agency to 10 percent of the agency's total payments in a year. CMS did so because otherwise it would have needed to increase the fixed dollar loss amount to a level that many were concerned would limit the access of severely ill beneficiaries to home health services across the country.

B. Purpose of the Report

The Home Health Independence demonstration, which ran from October 2004 to October 2006, arose from the concern that access to care for severely ill and disabled Medicare beneficiaries was thwarted by the homebound rule. Yet, concern about high-cost patients limited the number of participants. At the same time, both the total amount of outlier payments, and the proportion of episodes qualifying for outlier payments, has been increasing, suggesting agencies are taking in high-cost patients. What is not understood is the relationship between the beneficiaries who were targeted by the demonstration and those who are covered by the outlier payments.

The goal of this report is to understand the relationships among the proxy demonstration target group (ill, disabled beneficiaries), patients who receive outlier payments, and the agencies

that serve them.[3] To the extent that the target population and the outlier population overlap, and if the home health agencies generally accept patients who will receive outlier payments, then the demonstration concept may be viable and CMS' outlier policy is playing a role in ensuring access to care for this population. On the other hand, if the two groups have very different characteristics, then these differences might be why the care needs of the demonstration target group would not be met by the outlier policy. In that case, the results may suggest that an alternative reform, such as the development of a new case-mix group, might ensure the demonstration group's access to care. Finally, if the characteristics of outliers and proxy demonstration groups are similar but the groups do not overlap, the key question then becomes why some patients receive higher-level services that result in outlier payments and what types of home health agencies provide this level of care.

The remainder of this report is organized as follows. The data sources used in the analysis are presented and the strategy for identifying four different patient groups (proxy demonstration only; financial outlier only; proxy demonstration members and financial outlier; and all other home health recipients) is outlined. A beneficiary-level analysis is conducted that compares patient characteristics, service utilization, and geographic concentration across the different patient groups. An agency-level analysis follows and explores the distribution of patient groups across different types of agencies. The potential for extending the demonstration concept in light of the findings concludes the report.

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[3]Because the target demonstration beneficiaries cannot be clearly identified with administrative claims data, the term *proxy demonstration beneficiaries* is employed here as in previous analysis (Cheh et al., 2007).

II. DATA

The 2005 CMS Datalink files and home health cost reports are the main data sources for this analysis. We selected the year 2005 because it is one of the most recent years in the Datalink files and it corresponds to a full year of the demonstration. The Datalink files are episode-level data files for each payment episode found in the Medicare National Claims History file and contain 100 percent of all the fee-for-service Medicare claims since PPS was implemented in October 2000. The files were constructed by Fu Associates of Arlington, Virginia, and are linked with Outcome and Assessment Information Set (OASIS) records, as well as information from the Provider of Service File, the Area Resource File, the Enrollment Data Base File, the Group Health File, and Part A inpatient data. We linked this data with the home health cost reports, which are submitted annually, so we could obtain information on the agencies' costs per visit.

Before starting the analysis, we eliminated the following episodes:

1. ***All episodes for which no payment was made.*** These episodes were likely to have been denied by the fiscal intermediary.

2. ***All payments for partial episodes.*** Typically, partial episodes are paid when a beneficiary switches mid-episode to another home health agency. The agencies' ability to receive outlier payments will be complicated by the cross-over to another agency, and the agencies' incentives are unclear.

3. ***All episodes that occurred in Florida, California, and Texas.*** These three states had a high level of outlier payments in 2006 (18.5, 10.8, and 7.1 percent, respectively, compared with a national average of 3.4 percent, excluding Florida).[4] CMS has strong reasons to believe that these high rates may reflect fraud and abuse (DHHS 2009). As a result, it is unlikely that this large proportion of outlier payments is made for beneficiaries whose characteristics are typical of a true cost-outlier beneficiary.

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[4] Internal memo, CMS.

A. Definition of Patient Groups

Before describing the methods used to identify the patient groups, it is useful to review a few key components of Medicare home health payment and OASIS data collection procedures. Medicare pays for a home health episode of care, which is defined as a 60-day period. An individual can have multiple episodes of care. If a patient still requires care at the end of the 60 days, a new episode begins on the 61st day. A spell of illness is defined as a string of 60-day episodes that ends when a patient stops receiving home health care for 60 days.

A complete OASIS assessment, which contains the detailed information about patient characteristics that we need for this analysis, is completed at the start of each spell of illness, but not necessarily at the start of each episode. However, many of the data items collected in the start-of-care OASIS assessment are also collected when a patient has a resumption-of-care assessment after an inpatient stay, which may or may not correspond to a payment episode. OASIS assessments are also collected at other points in the home health stay, but only a small subset of the data elements required for this study is included. Thus, when we identify a patient based upon a payment (financial outlier) or health status characteristic at the end of care, we also need to develop an algorithm to identify the most relevant initial OASIS assessment to obtain the patient's characteristics.

To compare the characteristics of the different patient groups, we (1) define how a patient falls into one of these groups and (2) define the point in time at which we compare the beneficiary characteristics across the groups. This is important because these beneficiaries are generally quite ill and are likely to have multiple home health episodes within a given year. At some point during the year, an individual may qualify as an outlier patient, a proxy demonstration patient, or neither. However, if we include a patient in all of these different groups, it complicates the analysis and makes it difficult to draw conclusions about

characteristics that do not change over time, as we would be comparing the individual to himself or herself.

To compare the characteristics of the beneficiaries who would qualify for the Home Health Independence Demonstration with those who receive outlier payments, we defined four mutually exclusive patient groups: patients who appear to qualify for the demonstration (proxy demonstration beneficiaries), patients who had an episode of care that qualified for an outlier payment, patients who both appear to qualify for the demonstration and had an outlier payment, and those who qualify for neither. Figure II.1 presents a Venn diagram showing the construction of the groups; the methodology used to define these groups follows.

1. Proxy Demonstration Beneficiaries

In a previous analysis of the home health population, demonstration patients were identified as those who have (1) two or more consecutive episodes of care, (2) required help with three or more ADLs, and (3) require human or technological assistance to move (Cheh et al. 2007). In

Figure II.1. Construction of Four Analytic Beneficiary Groups
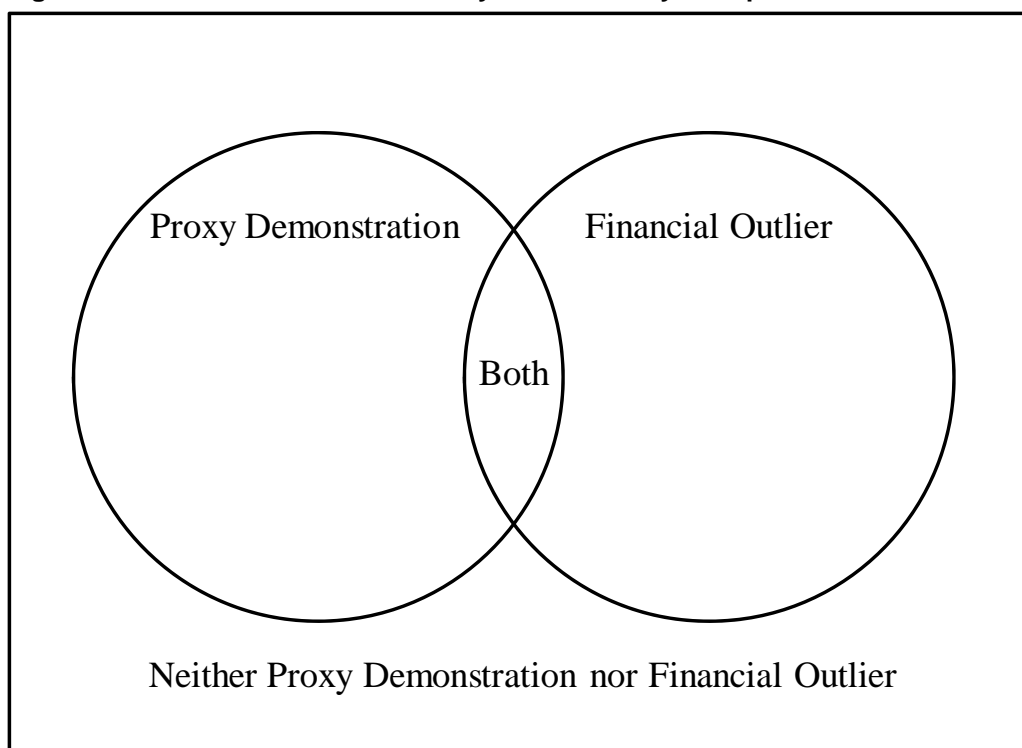
that analysis we used the initial OASIS assessment to identify whether the patient met the functioning criteria; however, the last available assessment in a year will potentially enable us to more reliably identify a higher proportion of permanently disabled beneficiaries. That is, some beneficiaries may enter home health care temporarily disabled; with the care provided, they might improve their functioning by the end of their episode. By using the last assessment, we are more likely to identify a set a patients who did not improve beyond the requirements of the demonstration, and thus are more likely to be permanently disabled. In this analysis, we defined a proxy demonstration beneficiary as any patient who had two or more consecutive episodes and an OASIS assessment (recertification, inpatient transfer, or discharge) indicating that the client required help with three or more ADLs and required assistance to move.[5]

Although we defined proxy demonstration patients using their recertification, inpatient transfer, or discharge OASIS assessment, the first OASIS assessment from the initial episode in the spell of illness contains the most complete beneficiary characteristics data needed for the analysis. Thus, we pulled patient characteristic data from the first episode in the qualifying spell of illness. However, using the 2005 data we were able to find only 48 percent of the initial episodes—many of the spells of illness had begun prior to 2005. To address this, we looked back to 2004 to identify the initial episode and OASIS assessments; even then we were able to find only 74 percent of the initial assessments, which left us with 26 percent of the patients with missing data. For this 26 percent, we started in January 2004 and moved forward in time until we identified the first resumption-of-care assessment for the patients, which would include most of

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[5] Note that by moving to the last assessment, as opposed to the initial assessment, we cannot include the ADL of eating, because it is not collected on the OASIS assessment at that point. However, eating is considered a late ADL; that is, it is often one of the last aspects of functioning that an individual loses. It is rare that an individual is functionally dependent in eating but not in the other ADLs. Hence, we do not believe we will miss many qualifying patients even if this ADL measure is unavailable.

the variables of interest. Using this approach, we were able to identify an assessment in 29 percent of the remaining missing cases. Thus, overall, we are missing patient characteristics for approximately 18 percent of the proxy demonstration patients.

2.   Outlier Beneficiaries

An outlier beneficiary is defined as an individual with a claim indicating that he or she was a financial outlier in any episode during 2005. If the outlier claim was associated with an OASIS assessment that provided the data needed for the study (that is, for a start-of-care or resumption-of-care episode) then beneficiary data from that episode was used. If, on the other hand, the identified outlier claim was not associated with an OASIS assessment that had the required data, then patient characteristics were drawn from the nearest prior OASIS assessment that contained the needed data. Using this process, we identified the needed OASIS data for 95 percent of the outlier beneficiaries.

3.   Both Proxy Demonstration and Outlier Beneficiaries

Individuals who meet the proxy demonstration and outlier criteria in 2005 fall into the both proxy demonstration and outlier category. Patient characteristics were identified using the method described previously for outlier beneficiaries.

4.   All Other Beneficiaries

This fourth group contains beneficiaries who received home health care and did not qualify as members of the previous three categories in 2005. Patient characteristics were drawn from the initial episode that occurred in 2005. If an initial episode did not occur in 2005, we looked back to 2004 to find the initial episode from that spell of illness identified in 2005. Using this process, we identified characteristics for 92 percent of the nonoutlier, nonproxy, eligible beneficiaries.

B. Outlier Episodes

In Appendix B, we examined the characteristics of 60-day episodes that were financial outliers in 2005. Because this analysis was conducted at the episode level, not the patient level, it did not require linking with OASIS assessments to obtain data and we included multiple episodes for the same individual. To select episodes for this analysis, we excluded from the 2005 Datalink file all zero-payment and partial-payment episodes, as well as episodes that took place in Florida, California, or Texas for the reasons described earlier. We then retained all episodes that were paid as financial outliers from the remaining set of episodes.

C. Agency Data

In the agency analysis, we sought to understand the characteristics of the agencies that serve these high-cost patients. To do this, we needed first to construct an agency-level file. We did this by creating a list of all provider numbers in the Datalink file for providers that submitted a claim in 2005 and then removed duplicates. The result is a list of 5,289 unique providers.

The next step was to identify the agencies that served a high proportion of high-cost patients. Because our analysis aims to compare the characteristics of agencies that served high-cost patients (both proxy demonstration patients and financial outliers) with agencies that did not serve such patients, and because too few agencies served a high percentage of both proxy demonstration and outlier patients to warrant a separate analysis group, we allowed those few agencies that qualified as both to remain in each group.

1. Agencies with a High Proportion of Proxy Demonstration Beneficiaries

To identify those agencies that served a high proportion of proxy demonstration patients, we summed the number of proxy-demonstration patients for each of the 5,289 agencies. We then calculated the proxy-demonstration percent of each agency's 2005 patient caseload as the sum of the number of proxy demonstration patients for that agency divided by the total number of

patients at that agency. We found that most agencies served at least one proxy demonstration patient, with the average agency serving 62 proxy demonstration patients. As a percentage of total patients, however, the average agency had 16 percent of its patients meet the qualification for a proxy demonstration patient; the median agency's qualification rate was 11 percent. Because the top quartile of agencies had 20 percent of their patients meet the qualification, we defined such agencies as those that served a high proportion of proxy demonstration patients, or 1,323 of the home health agencies.

2.   High Proportion of Outlier Patients

To identify those agencies that served a high proportion of outlier patients, we summed the number of patients who met the financial outlier criteria for each agency, and divided by the total number of patients at that agency. We found that many agencies did not serve any financial outliers, with the average agency providing care to 12 financial outlier patients and the median agency serving just 4 financial outlier patients. Because most agencies served so few outlier patients, the average agency had just 3 percent of its patients meet the qualifications for outliers, while the 75th percentile was at 4.1 percent. Because there was very little difference between the median agency and the 75th percentile and such a difference was just as likely to be driven by a random occurrence given the small number of patients, we set the criteria for a high-percentage outlier agency at the 90th percentile of all agencies. This criterion was met by 529 agencies. Thus, 7.95 percent or more of an agency's patients had to be classified as financial outliers in order to be classified as a agency that served a high proportion of outliers.

Finally, we defined all other agencies as those that did not meet either criteria described previously; 3,643 agencies were in this category.

3. Agency Cost Reports

As mentioned earlier, the Datalink files were already matched to the Provider of Service File and the Area Resource File; however, we also wanted agency per-visit costs, which are available on Medicare home health agency cost reports. To obtain those costs, we first identified all home health agency cost reports in the Hospital Cost Report Information System (HCRIS) data file for agencies whose fiscal years ended in 2005. There were 5,479 cost reports that met this criterion.

Among these, 85 agencies filed multiple cost reports in that year, most likely because of a change in their fiscal year. For these 85 agencies, we selected the cost report from the fiscal year that covered the longest period of time (typically nine months.) We then merged the cost data from Worksheet C of the selected cost report—which contains the agency's cost per visit by discipline—to the agency-level file using the Medicare provider number.

Although home health agency cost reports reflect the accounting cost of providing care, in some circumstances they do not reflect true resource use. For example, an agency may provide a handful of medical social worker visits in a year but not incur any accounting costs for that service, as the service might be provided without charge by the provider. If we retain these outlier costs, we run the risk of having our results skewed by outliers. This is especially problematic because our low-cost outliers are bounded by 0, whereas our high-cost outliers are not bounded. In order to insure the per-visit costs are not skewed by the high-cost outliers, we trimmed our cost data by excluding the highest and lowest 5 percent of the observations.

Finally, we adjusted the per-visit costs to reflect geographic wage differentials. The challenge is that agencies serve beneficiaries in different geographic areas, so no single index is

appropriate to adjust costs.[6] To address this issue, we created a weighted index in which the weights were the proportion of the agency's patients from that geographic area. We used this patient-weighted index to adjust the agencies' per-visit costs.

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[6] Another challenge is that the CMS wage index in theory is designed to adjust only the labor costs, and the cost per visit from worksheet C combines both labor and other costs. However, the majority of home health visit costs are labor costs.

III. ANALYSIS APPROACH

To understand the differences among the different types of patients, we compared the patient characteristics for all patients who met those criteria. For categorical variables, we compared the percentage of the patients in the group that had the characteristic (for example, the percentage that are male); for continuous variables, we compared the average characteristic (for example, the average number of skilled nursing visits.) Because the data for the analysis included the entire population of Medicare beneficiaries who received home health care in 2005, we did not conduct tests of statistical significance because there is no sampling error. Rather, we looked for substantial differences in magnitude.[7]

To understand whether the agencies who served these patients had unique characteristics, we began by analyzing whether the different types of patients were concentrated in particular agencies. To do this, we reassigned each of the patients in the four different patient groups to three patient groups, allowing the patients who qualified as both outliers and proxy demonstration beneficiaries to count separately as both. We then assigned each of these patients to a home health agency, based upon the provider number of the agency that completed the OASIS instrument used in the patient analysis. We then calculated the Lorenz curves, which are the cumulative frequency of the different patient types by the cumulative frequency of the number of home health agencies. By comparing these cumulative frequencies, we determined the relative concentration of patients in the agencies.

To understand the differences in the characteristics of the agencies that serve a disproportionate share of the different patient groups, we compared agencies with a high

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[7] Note that with patient groups that range from 20,000 to 2.2 million observations, almost all differences are likely to be statistically significant.

proportion of such patients with the agencies that did not have high proportion of such patients. As with the beneficiary analysis, for categorical variables we compared the percentage of the agencies in the group that had the characteristic (for example, the percentage associated with a hospice); for continuous variables, we compared the average characteristic (for example, the average number of skilled nursing visits.) Because the data for the analysis include all the home health agencies that provided care in 2005, we did not conduct tests of statistical significance because there is no sampling error. Again, we looked for differences in the magnitude of the agency characteristic.

IV. BENEFICIARY-LEVEL ANALYSIS OF MEDICARE HOME HEALTH PATIENTS

The proxy demonstration patients and financial outlier patients were small proportions of the overall home health population. The proxy demonstration patients (both proxy demonstration only and those that were financial outliers) accounted for 13.6 percent of the overall home health patients; the financial outlier population (including proxy demonstration patients) accounted for only 2.7 percent of the overall population (Table IV.1). Although there is some overlap between the two patient groups, only 7.5 percent of the proxy demonstration patients had also received a financial outlier payment during the year, suggesting that financial outlier payments were not a major factor in ensuring access to care for this group of patients. Furthermore, the proxy demonstration patients accounted for 36 percent of the financial outlier patients, suggesting that the majority of the financial outlier patients were not among this group of severely disabled beneficiaries.

A. Beneficiary Characteristics

1. Demographic Characteristics of Beneficiaries[1]

The proxy demonstration and financial outlier groups had many similar demographic characteristics, but they also had important differences. Compared with patients with a financial outlier episode, more proxy demonstration beneficiaries were part of a minority group and older

Table IV.1. Frequency of Target Populations in Medicare Home Health in 2005

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier in 2005	All Other Home Health Patients
Number of Beneficiaries	279,935	37,752	20,972	1,872,786
Percent of Beneficiaries	12.6	1.7	1.1	84.7

Source: Datalink.

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[1] Percentages shown in the tables in this section are from the nonmissing records. The rows labeled missing indicates the percentage of missing observations for the variable.

than age 65. As shown in Table IV.2, almost one-quarter of proxy demonstration beneficiaries were members of a minority group, with the vast majority being African American. A similar percentage (22 percent) of home health beneficiaries who were both proxy demonstration beneficiaries and outliers were also minorities. A smaller percentage of outliers and "all other" beneficiaries—18.5 and 15.4 percent, respectively—were minorities. Although a large proportion of all home health recipients were older than 65, patients with an outlier episode were more likely to be younger than 65 than were proxy-only and all other home health beneficiaries. These outlier patients were also more likely to qualify for Medicare through disability insurance and to use Medicaid to buy in to Part B coverage during an episode.

In terms of geographic distribution, proxy demonstration beneficiaries tended to live in poorer and more nonurban areas than did all other Medicare home health patients (Table IV.2). Slightly more than 13 percent of the proxy demonstration beneficiaries lived in counties that were either not adjacent to a metropolitan county or ones that had fewer than 2,500 residents. Of the roughly 29 percent who did not live in a metropolitan county, this amounts to 45 percent. In contrast, more than 85 percent of patients with an outlier episode lived in a metropolitan area and fewer than 4 percent lived in a nonurban county with fewer than 2,500 residents.

A large proportion of proxy demonstration patients lived in a county with a relatively high percentage of the population living in poverty in 2002. Nationwide, 12.1 percent of the country lived in poverty in 2002 (Procter and Dalaker 2003), but 60 percent of the proxy demonstration beneficiaries lived in counties with a higher rate and slightly more than 2 percent of these patients lived in a county with an extremely high poverty rate of 26.3 percent. In contrast, only 41 percent of the all other beneficiaries and 44 percent of the financial outlier population lived in counties with above-average poverty rates.

Table IV.2. Patient Demographics and Geographic Distribution (Percentage)[a]

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier (First Episode)	All Other Home Health Patients
Age				
Under age 65	12.3	17.8	16.8	10.4
65 years and older	87.7	82.2	83.2	89.6
Invalid age	0.0	0.0	0.0	0.0
Missing	0.0	0.0	0.0	0.0
Original Medicare Status				
Old age and survivors insurance beneficiary	73.9	71.3	69.2	79.8
Disability insurance beneficiary	25.5	27.3	29.8	19.6
End stage renal disease beneficiary	0.4	0.8	0.7	0.4
Both end stage renal and disability	0.2	0.6	0.3	0.2
Missing	0.1	0.2	0.1	0.1
Minority				
American Indian/Alaska Native	0.8	0.5	0.8	0.5
Asian	0.6	0.9	0.9	0.7
African American	19.0	12.9	16.4	11.2
Hispanic or Latino	3.6	4.2	4.2	2.9
Native Hawaiian or Pacific Islander	0.1	0.1	0.1	0.1
Missing	17.8	5.2	14.2	4.6
Female	65.4	61.5	62.4	64.0
Missing	0.0	0.0	0.0	0.0
Medicaid State Buy-in for Part B During Episode	1.9	2.8	4.5	1.4
Missing	0.0	0.0	0.0	0.0
Beneficiary Located in:				
Metropolitan county	70.8	82.4	81.9	80.2
County adjacent to a metropolitan county and more than 2,500 residents in county	16.1	10.3	10.4	11.4
County not adjacent to a metropolitan county or county with fewer than 2,500 residents	13.2	7.3	7.7	8.4
Missing	1.7	0.4	0.5	1.0
Beneficiary Located in Counties with:				
Greater than 26.3 percent of total population living in poverty	2.3	0.6	0.9	0.7
Greater than 17.2 percent of total population living in poverty	23.1	18.4	25.3	11.1
Greater than 12.1 percent of total population living in poverty	60.4	44.0	51.9	40.8
Missing	0.1	0.1	0.2	0.0
Sample Size	**279,935**	**37,752**	**20,972**	**1,872,786**

Source: Datalink files.

[a] The presented percentages are out of the non-missing values. The percentage of missing values for each variable is included in row labeled "Missing."

Although the demographic characteristics of the proxy demonstration-only group differed in several ways from those of all the other groups, proxy demonstration beneficiaries were much more likely to die after admission to home health (Table IV.3). These high death rates are perhaps due to the severity of the illnesses and disabilities that define these beneficiaries. Slightly more than 17 percent of beneficiaries who were members of the proxy-only group died within 4 months of admission to home health; the percentage increases to almost 19 percent for death within 10 months of admission.[2] By comparison, only 9 percent of the outliers died within 4 or 10 months, about the same percentage as all other home health beneficiaries. The higher rates of death are consistent with the previous findings on the demonstration population; one of the reasons cited by home health agencies for not enrolling eligible patients in the Home Health Independence Demonstration was that these patients were in declining health and the agencies did not think the patients could take advantage of an improved ability to leave their homes (Cheh et al. 2007).

2. Prior Health Care Use

Beneficiaries with a financial outlier episode had higher Part A costs than other Medicare home health recipients, which corresponds with a greater number of Medicare-covered acute hospital days and skilled nursing facility (SNF) days prior to admission to home health (Table IV.3)[3]. Outlier-only patients averaged slightly more than eight covered acute hospital days; total Part A spending for these patients during the period beginning 120 days prior to admission to home health and ending at admission was more than $24,841. Despite the severity

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[2] Note that the data set was constructed roughly six months after the end of 2005. As a result, although we can construct rates of death within four months for all observations, due to truncation of the observation, we need to constrain the analysis group to those that began their episodes before July 2005.

[3] In this case, Part A expenditures are calculated as all facility admissions. It does not include Part A home health costs.

Table IV.3. Prior Health Care Use (Percentage Unless Stated Otherwise)

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial (First Episode)	All Other Home Health Patients
Number of covered acute hospital days prior to admission	5.5	8.2	7.1	6.3
Number of covered rehabilitation days in 120 days prior to admission	1.2	1.2	1.7	1.1
Number of covered long-term care hospital days prior to admission	0.6	0.7	0.9	0.2
Number of covered SNF days 120 days prior to admission	5.9	6.2	7.4	5.4
Died within four months of admission (all admissions)	17.4	8.8	15.6	11.0
Died within 10 months of admission (January 2005 – June 2005 admissions)	18.8	8.7	16.4	9.8
Total Part A spending for care started up to 120 days before episode beginning (Mean)[a]	$19,509	$24,841	$26,375	$18,218
Total Part A spending for care started within 120 days before episode beginning (Standard Deviation) [a]	$20,270	$23,543	$24,067	$18,658
Total Part A spending for care started within 120 days before episode beginning (Median) [a]	$12,855	$18,508	$19,611	$13,234
Sample Size	**279,935**	**37,752**	**20,972**	**1,872,786**

Source: Datalink files.

[a]Excludes home health patients.

of the illnesses and disabilities that define the proxy-only group, this group required fewer acute hospital days, 5.5 days on average, which perhaps indicates the different care needs of these two populations. Total Part A spending for the proxy-only patients for care 120 days prior to admission was approximately $19,509. Interestingly, the covered acute hospital days, SNF days, and Part A costs for beneficiaries who were both proxy eligible and financial outliers were similar to those of the outlier-only group: 7.1 days, 7.4 days, and $26,375, respectively. This is the opposite pattern observed for mortality, in which these proxy eligible patients with outlier episodes have mortality rates similar to the proxy-only patients. This suggests that the overall health status and prognosis of these proxy-eligible outliers might have been related to the conditions that defined them as proxy eligible; their Part A-covered care prior to admission to home health, however, was more similar to that of financial outlier-only patients. The mean number of rehabilitation and long-term-care hospital days was low and similar across all four groups, suggesting that the bulk of the difference in Part A costs was driven by the acute hospital and SNF utilization for patients with outlier episodes.

3.   Functional Status of Beneficiaries and Living Situation[4]

Understanding the functioning, care needs and conditions of the home health beneficiary is critical for understanding how these patients may need different levels of care. However, especially among the proxy demonstration group, we had a high number of missing observations for some of these characteristics. The reason for this higher level of missing data among the proxy demonstration group is, as we noted in chapter II, the prolonged number of spells of illness limited our ability to matched to start-of-care assessments which contained all the appropriate data. For the proxy demonstration patients and proxy demonstration/financial outlier patients,

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[4] These results must be interpreted carefully due of the large number of missing observations and the fact that we do not know the distribution of the missing values.

we had to use a recertification of care assessments (instead of a start of care assessment) for 16

and 12 percent of the patients, respectively. In contrast, for the financial outliers only and the all

other patients, 94 percent matched to a start of care assessment. The question then becomes: is it

reasonable to assume that the distribution of the missing values is more or less the same as the

reported values?

    We have no reason to expect that the distribution is different. The proxy demonstration

patients were selected based on high ADL limitations at the end of their episode. It is very likely

that when they started care, these beneficiaries were at least as functionally compromised when

they started their care; and indeed, we find that the ADL measures that we have reflect that. This

suggests that in the group where the missing values are the greatest, it does not appear that the

results are distorted, since it meets our expectation. Nevertheless, we caution that these missing

data could affect the underlying results, and these results should be considered more exploratory.

    The functional, sensory, and cognitive status of proxy demonstration patients was far lower

than that of outlier-only beneficiaries and all other home health beneficiaries (Table IV.4). The

demonstration was designed to help the severely disabled, so it was expected that members of the

proxy-only or the "both" groups would require more assistance with the five ADLs. More than

75 percent of the proxy demonstration beneficiaries required assistance with grooming; slightly

more than 40 percent of the outlier-only patients and about 48 percent of all other home health

recipients required assistance with that ADL. Fewer than 3 percent of proxy-eligible patients

were able to walk independently and more than 17 percent were unable to wheel themselves or

were bedfast. Fewer than half of the proxy-only beneficiaries were alert and oriented compared

with more than 70 percent of the outlier-only patients and 66 percent of all other nonproxy,

nonoutlier beneficiaries. At the other end of the cognitive functioning spectrum, more than 22

Table IV.4. Patient Functioning and Sensory Status (Percentage)[a]

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier (First Episode)	All Other Home Health Patients
Grooming				
Able to groom self unaided	21.3	57.6	22.6	52.3
Needs some assistance	60.9	38.5	60.4	42.5
Is dependent on human assistance	17.8	3.9	17.0	5.2
Unknown	0.0	0.0	0.0	0.0
Missing	17.8	5.2	14.2	4.6
Dressing				
Able to dress unaided	9.7	41.5	10.2	33.8
Needs some assistance	69.1	53.9	68.9	60.3
Is dependent on human assistance	21.2	4.6	20.9	5.9
Unknown	0.0	0.0	0.0	0.0
Missing	2.0	3.1	1.8	3.5
Bathing				
Able to bath independently	1.9	13.9	2.0	10.6
Needs some assistance	81.8	82.9	82.5	85.4
Is dependent on human assistance	16.3	3.2	15.4	4.1
Unknown	0.0	0.0	0.0	0.0
Missing	2.0	3.1	1.8	3.5
Toileting				
Able to toilet independently	35.1	74.2	37.7	65.9
Needs some assistance	46.0	22.5	43.0	30.0
Is dependent on human assistance	18.9	3.3	19.3	4.1
Unknown	0.0	0.0	0.0	0.0
Missing	2.0	3.1	1.8	3.5
Urinary Incontinence				
No incontinence or catheter	32.6	68.1	40.8	63.3
Patient is incontinent unless cued	8.2	8.4	9.8	8.0
Patient is incontinent at night	3.7	1.4	2.5	2.1
Patient is always incontinent	55.5	22.0	47.0	26.6
Missing	9.1	4.5	8.2	4.1
Transferring				
Able to transfer independently	7.9	37.4	9.5	28.4
Transfers with assistance	84.7	61.6	83.1	70.4
Unable to transfer from bed	7.5	1.0	7.4	1.2
Unknown	0.0	0.0	0.0	0.0
Missing	2.0	3.1	1.8	3.5
Ambulation				
Able to walk independently	2.2	18.8	2.5	12.8
Walks with assistance	70.6	72.8	66.4	80.0
Chairfast, wheels self independently	9.3	5.2	13.7	3.1
Unable to wheel self or bedfast	18.0	3.1	17.4	4.1
Unknown	0.0	0.0	0.0	0.0
Missing	2.0	3.1	1.8	3.5
Has Pain that Affects Daily Activities	61.6	53.0	56.2	53.7
Missing	9.7	4.4	8.8	4.1
Eating				
Able to eat independently	43.1	73.4	47.6	69.1
Requires meal setup or some supervision	45.2	23.8	41.7	27.0
Must be supervised throughout meal	8.4	1.9	8.0	2.8

Table IV.4 (continued)

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier (First Episode)	All Other Home Health Patients
Supplemental nutrients through nasogastric tube or gastrotomy	0.8	0.3	0.7	0.3
Only fed with nasogastric tube or gastromy	2.2	0.5	1.8	0.6
Unable to eat	0.3	0.2	0.3	0.1
Unknown	0.0	0.0	0.0	0.0
Missing	17.8	5.2	14.2	4.6
Vision				
Normal vision	55.2	79.9	67.0	78.0
Partially impaired	40.1	18.2	28.9	20.2
Severely impaired	4.6	1.8	4.2	1.9
Missing	2.0	3.1	1.8	3.5
Hearing and Ability to Understand Spoken Language				
No difficulty	47.3	68.5	58.6	62.8
Minimal difficulty - understands most multi-step instructions	38.5	25.6	31.7	29.2
Moderate difficulty understanding most one-step instructions	10.1	4.6	7.0	6.1
Severe difficulty understanding simple greetings and comments	3.1	1.2	2.1	1.6
Unable understand or nonresponsive	1.0	0.2	0.7	0.3
Missing	17.8	5.2	14.2	4.6
Expression of Language				
No observable impairment	47.8	74.2	57.1	70.9
Minimal or moderate impairment in expressing ideas or needs	44.4	23.7	36.2	26.3
Severe impairment in expressing ideas or needs or unable to respond	7.8	2.1	6.7	2.9
Unknown	0.0	0.0	0.0	0.0
Missing	17.8	5.2	14.2	4.6
Cognitive Functioning				
Alert and/or orientated	44.9	71.3	54.8	66.4
Requires prompting under stressful or unfamiliar conditions	33.0	20.7	27.9	22.3
Requires assistance and some direction in specific situations	13.6	6.0	11.1	7.7
Requires considerable assistance in routine situations	5.7	1.6	4.4	2.7
Totally dependent in cognitive functioning	2.8	0.4	1.9	0.9
Missing	17.8	5.2	14.2	4.6
Sample Size	**279,935**	**37,752**	**20,972**	**1,872,786**

Source: Datalink files.

[a] The presented percentages are based only on non-missing values. The percentage of missing values for each variable is included in row labeled "Missing."

percent of the proxy-only group required assistance or were totally dependent in cognitive functioning; only 8 percent of the outlier-only patients required this level of assistance.

Surprisingly, the functional, sensory, and cognitive abilities of outlier-only beneficiaries were *better* than those of all other home health beneficiaries. The functional status of the outlier group was higher than that of all other nonoutlier, nonproxy home health beneficiaries across every ADL category. Similarly, compared with all other home health recipients, a larger percentage of outlier-only patients were alert and oriented and displayed no language difficulties or vision problems.

The greater functional and cognitive abilities of the outlier-only patients may help explain why a substantial percentage of these beneficiaries were able to live alone compared with other home health patients (Table IV.5). More than 40 percent of the outlier patients either lived alone, compared with 30 percent for all other home health beneficiaries and only 22 percent of the proxy demonstration beneficiaries.

4.   Care Requirements of Beneficiaries

Given the disabilities of the proxy demonstration patients and the high proportion of these individuals in declining health, it is not surprising to find that their primary caregivers provided more frequent and intensive care compared with that provided to all other beneficiaries. Primary caregivers provided assistance several times during the day and night to more than 63 percent of the proxy-only group compared with 38 percent of the outlier-only patients and 45 percent of all other nonproxy, nonoutlier home health beneficiaries that received this intensive level of care. In terms of the type of care provided by the primary caregiver, almost 80 percent of the proxy

Table IV.5. Patient Living Situation, Transportation, and Support (Percentage)[a]

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier (First Episode)	All Other Home Health Patients
Current Residence				
Owned or rented residence	74.4	82.4	77.9	79.2
Family member's residence	16.4	8.9	12.1	12.7
Boarding home or rented room	0.6	0.7	0.6	0.6
Board and care or assisted living	7.9	7.1	8.8	6.7
Other	0.6	0.9	0.6	0.8
Missing	17.8	5.2	14.2	4.6
Patient lives with:				
Spouse or significant other	36.1	31.3	36.0	37.8
Other family member	35.6	22.1	28.5	26.9
A friend	1.2	1.3	1.1	1.2
Paid help	10.1	5.1	8.7	6.7
Lives alone	22.1	42.5	30.0	31.0
Other	0.9	1.2	1.1	0.9
Missing	17.8	5.2	14.2	4.6
Patient has and/or Help from:				
Relatives, friends living outside the home	54.8	60.9	56.5	57.4
Person residing in home (not paid)	60.6	44.0	53.1	56.0
Paid help	24.1	16.4	24.7	16.7
None of the above	1.4	5.2	3.1	2.2
Unknown	0.1	0.2	0.1	0.1
Missing	17.8	5.2	14.2	4.6
Patient's Primary Caregiver is:				
No one person	28.4	24.9	28.2	31.1
Spouse or significant other	35.8	30.0	31.4	32.6
Daughter or son	10.1	10.8	10.6	8.9
Other family member	2.3	4.0	2.5	3.0
Friend, community member, or church member	12.0	8.3	12.5	8.6
Paid help	11.4	21.9	14.8	15.7
No known caregiver	0.0	0.1	0.1	0.0
Missing	19.0	10.3	17.0	6.7
Frequency of Assistance from Primary Caregiver:				
Several times during day and night	63.4	38.0	57.1	45.2
Several times during day	24.0	31.8	23.7	36.1
Once daily	4.8	9.6	6.4	7.0
Three or more times per week	4.6	10.9	6.6	6.9
One to two times per week	2.3	6.8	4.1	3.6
Less often than weekly	0.8	2.5	1.8	1.1
Unknown	0.1	0.4	0.3	0.2
Missing	28.3	30.1	29.3	21.5
Type of Primary Caregiver Assistance:				
Assistance with activities of daily living	78.7	51.2	72.4	62.5
Assistance with instrumental activities of daily living	95.9	90.1	92.9	94.3
Environmental support (home maintenance)	93.1	86.9	90.5	91.0
Psychosocial support	94.8	92.1	94.0	93.8
Advocates or facilitates patient's participation in appropriate medical care	84.1	76.8	81.9	80.1
Financial help	34.3	25.1	33.3	26.8
Health care agent	25.7	20.0	26.5	21.4

Table IV.5 (continued)

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier (First Episode)	All Other Home Health Patients
Unknown	0.1	0.3	0.2	0.1
Missing	30.8	35.3	35.8	23.0
Transportation				
Able to independently drive a car or use a bus	0.5	2.7	0.8	1.5
Able to ride in car or use a bus when accompanied	89.3	93.8	87.2	95.1
Requires transportation by ambulance	10.2	3.6	12.0	3.3
Missing	17.8	5.2	14.2	4.6
Sample Size	**279,935**	**37,752**	**20,972**	**1,872,786**

Source: Datalink files.

[a] The presented percentages are out of the non-missing values. The percentage of missing values for each variable is included in row labeled "Missing."

patients received help with ADLs; fewer than 51 percent of outlier-only patients and 63 percent of all other beneficiaries received assistance with ADLs.[5] The fact that more than 10 percent of the proxy-eligible patients required transportation by an ambulance highlights the severity of the illnesses and disabilities associated with this population.

In contrast, the greater independence of the outlier-only patients might be one reason they were more likely to have a paid primary caregiver. Financial outliers had a paid primary caregiver about 22 percent of the time, compared with slightly more than 11 percent for the proxy-only group and about 16 percent for all other beneficiaries. They were also less likely to receive care from an unpaid person residing in the home and just as likely to receive help from relatives or friends living outside the home. Patients who are relatively functionally independent and living on their own may need to employ paid primary caregivers for help during acute care episodes; the permanently disabled population is more likely than those who are relatively functionally independent to need a long-term, unpaid caregiver in order to avoid nursing home placement. This does not suggest that proxy demonstration patients do not use paid care; indeed, 25 percent of patients who were proxy eligible received care from paid help—more than the outlier patients. It is just that the proxy demonstration patients might not be able to depend on a paid primary caregiver, given their high care needs.

The independence of the financial outlier patients is also evident in their ability to manage their medication regimens (Table IV.6). Although injectable medications were infrequently prescribed and few patients in any group were able to take their injectable medications by themselves, a larger percentage of outlier-only beneficiaries were able to manage these medications. The relatively lower functioning level of the proxy-eligible patients might have

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[5]Proxy demonstration beneficiaries are defined as needing human assistance for multiple ADLs. However, the primary caregiver (who takes the lead responsibility for providing or managing the patient's care) might not be able to help the beneficiary with ADLs, and thus might not be providing that type of care.

Table IV.6. Care Requirements (Percentage)[a]

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier (First Episode)	All Other Home Health Patients
Therapies				
Intravenous or infusion therapy	2.0	4.4	3.2	2.2
Parenteral nutrition (PTN or Lipids)	0.2	0.3	0.2	0.1
Enteral nutrition	3.6	1.0	2.7	1.2
None	94.3	94.4	94.1	96.6
Missing	2.0	3.1	1.8	3.5
Equipment Management (Oxygen, IV/Infusion Therapy, Enteral/Parenteral Supplies)				
No need for equipment	79.0	84.2	80.5	84.0
Able to use equipment independently	2.2	4.0	2.4	3.9
Able to use equipment with preparation	4.1	3.7	3.6	4.1
Needs human assistance	14.7	8.1	13.5	8.0
Missing	17.8	5.2	14.2	4.6
Oral Medication Management				
No medications prescribed	1.3	0.8	1.2	0.8
Able to take medications independently	20.7	52.0	27.9	44.5
Able to take medications with preparation	38.0	32.7	37.7	34.3
Needs human assistance	39.9	14.5	33.3	20.5
Missing	17.8	5.2	14.2	4.6
Inhalant/Mist Medications Management				
No medications prescribed	75.4	79.1	77.7	77.0
Able to take medications independently	8.5	13.5	8.9	13.2
Able to take medications with preparation	8.8	5.2	7.3	6.3
Needs human assistance	7.3	2.2	6.1	3.5
Missing	17.8	5.2	14.2	4.6
Injectable Medications Management				
No medications prescribed	77.5	75.2	68.8	83.4
Able to take medications independently	4.3	10.3	6.9	6.4
Able to take medications with preparation	4.4	4.2	5.3	3.1
Needs human assistance	13.7	10.4	19.1	7.2
Missing	17.8	5.2	14.2	4.6
Respiratory Treatments				
Oxygen	16.5	10.7	14.5	12.8
Ventilator	0.2	0.1	0.2	0.1
Continuous positive airway pressure	0.9	1.0	1.1	0.9
None of the above	82.8	88.5	84.8	86.6
Missing	17.8	5.2	14.2	4.6
Urinary Catheter	11.4	4.4	13.0	3.4
Missing	17.8	5.2	14.2	4.6
Ostomy	18.2	5.5	14.8	4.6
Missing	2.1	4.0	3.6	1.8
Wound	62.5	78.0	71.2	34.0
Missing wound	2.0	3.1	1.8	3.5
Wound Type[b]				
Pressure ulcer	23.9	12.8	31.4	8.3
Statis ulcer	5.3	10.5	11.1	2.6
Surgical wound	24.4	53.2	32.6	48.6
Missing wound type	14.2	1.7	10.3	1.7
Sample Size	**279,935**	**37,752**	**20,972**	**1,872,786**

Table IV.6 (continued)

Source: Datalink files.

[a] The presented percentages are out of the non-missing values. The percentage of missing values for each variable is included in row labeled "Missing."

[b] Conditional on having a wound.

affected their ability to take oral medications. Slightly more than 20 percent of the proxy-only patients and 27 percent of patients who were proxy eligible and had outlier episodes were able to take oral medications independently. On the other hand, more than half of the outlier-only patients and 45 percent of all other home health beneficiaries were able to take oral medications by themselves.

Patients with an outlier episode were the most likely to require wound care, but proxy beneficiaries had more ulcers and outlier patients had more surgical wounds (Table IV.6). More than 78 percent of outlier-only patients and 71 percent of proxy demonstration outliers required some type of wound care, in contrast to only 63 percent of the proxy-only group. Pressure ulcers were more common in proxy demonstration patients, perhaps due to the limited mobility of that population. The relatively large percentage of outlier patients with a stasis ulcer (about 11 percent) might indicate that a condition other than generally being bedfast was associated with their ulcers. However, the difference in the incidence of surgical wounds between the proxy-eligible outliers compared with the outlier-only group is large—more than 20 percentage points. It is possible that there is something particular about the conditions associated with the outlier-only group—or that the proxy-eligible patients are poor candidates for surgery due to their frailty—that led to the high incidence of surgical wounds among outlier-only patients.

5.   Selected Conditions Among Beneficiaries

The most common diagnoses across the four patient groups were generally the same and are common for Medicare home health patients (Table IV.7). But the proxy demonstration and outlier patients had high rates of diabetes and skin ulcers relative to all other beneficiaries.[6]

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[6] The EH_DIAG1 variable from the OASIS assessment is used to identify the primary diagnosis. If the International Classification of Diseases Ninth Revision (ICD-9) code for this variable begins with a V, indicating that it does not identify a specific condition, we then use the ICD-9 code of the M0245 variable (the ICD-9 code used for payment submission by the home health agency) as the primary diagnosis. If the values for both variables begin with a V, then we use the M0245 variable. If the value of M0245 is missing, we retain the EH_DIAG1 variable.

Table IV.7. Frequency of Selected Conditions (Percentage)[a]

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier (First Episode)	All Other Home Health Patients
Primary Disease (ICD-9 classification)				
Diabetes mellitus (250)	9.1	10.6	14.9	5.3
Symptoms involving nervous and musculoskeletal systems (781)	12.3	3.5	4.3	20.6
Heart failure (428)	4.6	2.8	3.4	4.6
Chronic ulcer of skin (707)	7.1	9.3	17.4	2.2
Encounter for other and unspecified procedures and aftercare (V58)	2.0	11.8	5.0	6.4
Other complications of procedures, NEC (998)	0.7	9.7	3.9	1.0
Other diagnoses	64.3	52.3	51.1	59.9
Missing	0.0	0.0	0.0	0.0
Health Risk Factors				
Heavy smoking	7.4	8.9	7.1	7.7
Obesity	19.0	21.7	22.1	15.3
Alcohol dependency	1.1	1.6	1.0	1.5
Drug dependency	0.5	0.6	0.6	0.4
None of the above	74.1	70.3	71.7	77.2
Missing	17.8	5.2	14.2	4.6
Prior Conditions				
Urinary incontinence	37.9	18.3	31.1	22.5
Indwelling/suprapubic catheter	5.9	2.1	7.6	1.5
Intractable pain	10.7	7.3	8.8	9.9
Impaired decision-making	23.3	9.3	17.4	12.1
Disruptive or socially inappropriate behavior	2.0	0.8	1.3	1.1
Memory loss that requires supervision	16.9	5.7	12.4	9.3
None of the above	44.8	68.6	51.3	61.8
Missing	17.8	5.2	14.2	4.6
Sample Size	**279,935**	**37,752**	**20,972**	**1,872,786**

Source: Datalink files.

[a] The presented percentages are out of the non-missing values. The percentage of missing values for each variable is included in row labeled "Missing."

Almost 10 percent of the proxy- and outlier-only patients had diabetes as a primary diagnosis. The proportion increases to 15 percent for patients who were both proxy eligible and financial outliers. In contrast, slightly more than 5 percent of all other home health recipients had diabetes as a primary diagnosis. Skin ulcers too were more common among proxy eligible and financial outliers, particularly among patients who were members of both groups. For the patients in both groups, defined by their high home care use and high levels of disability, diabetes and skin ulcers accounted for almost one-third of their primary diagnoses.

Compared with beneficiaries with an outlier episode, a larger percentage of proxy-only patients displayed symptoms involving the nervous and musculoskeletal systems. An even larger percentage of all other home health recipients had these symptoms as their primary diagnosis. This diagnosis does not identify specific conditions, such as Parkinson's disease, but includes symptoms such as gait abnormality, tremors, spasms, and ataxia.[7]

A primary diagnosis of unspecified conditions or symptoms (V58 or 998) was more common in the outlier-only group than it was for proxy-eligible beneficiaries and all other home health recipients, but most of these diagnoses were related to wound care. More than 20 percent of outlier-only patients had a primary diagnosis starting with V58 or 998. When analyzing the full five-digit ICD-9 codes for the outlier-only group, more than 84 percent of the 998 diagnoses were for wound care or postoperative infection; more than three-quarters of the V58 codes were for attention to wound dressings or care following surgery (results not shown). The prevalence of diagnosis codes relating to wounds or post-surgery care is consistent with the large percentage of outlier-only patients who have surgical wounds (Table IV.6).

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[7] Gait abnormality is often assigned as the primary diagnosis for patients who primarily use rehabilitation therapy services. For example, it will be used when a surgery is performed that addresses an underlying diagnosis, and the gait abnormality is the primary reason for home health care.

Outlier-only beneficiaries had fewer prior conditions than did either all proxy or nonproxy beneficiaries. (Table IV.7). As expected, beneficiaries who were proxy eligible had a greater incidence of prior conditions, especially urinary incontinence, impaired decision making, and memory loss. The percentages are slightly smaller across all prior conditions, except catheterization, for those who were both proxy eligible and financial outliers. In terms of health risks, roughly 20 percent of patients with an outlier episode were obese, which is about 2 percentage points more than patients who were proxy only and more than 6 percentage points more than all other home health beneficiaries. There were only small differences across the four groups for other health risk factors, such as heavy smoking, alcohol dependency, and drug dependency.

6. Summary

Proxy beneficiaries—those who by definition are sick and permanently disabled—were about 13 percent of the total home health patients in our study population (Table IV.1). Of those, about 7 percent were financial outliers as well. As we found in the demonstration, a substantial proportion of these beneficiaries were near the end of their lives and dying while in home health. By definition, their physical functioning was limited, which led to a higher probability for pressure ulcers. They were also more cognitively impaired. But these beneficiaries were more likely to have home and social support, which is likely why they were able to remain in their homes. However, we did have a substantial number of missing values for those patients; making these results more exploratory than conclusive.

Financial outliers were about 3 percent of the population, and 36 percent were also proxy demonstration patients. Those who were financial outliers only, however, seemed unique. Relative to other home care beneficiaries, they were (1) functionally more independent; (2) more likely to live on their own and have a paid primary caregiver; and (3) more likely to have

surgical wounds that required care, although they had many of the same conditions as other patients. We had a fewer number of missing values among these patients than among the proxy demonstration patients; but we still note that because of the missing values, these results are more exploratory than conclusive.

B. Medicare Home Health Service Utilization Patterns[8]

The differences in patient characteristics suggest that the beneficiaries will use different levels and types of services. Indeed, we find very large differences in the number of visits per episode, but we also observe that in terms of overall use outlier-only and proxy demonstration outliers are the most similar (Table IV.8)[9]. Beneficiaries who were both outliers and proxy demonstration patients used the most services on average and had the greatest mix of services across disciplines. These patients received an average of 73 visits per episode, 23 percent more than the outlier-only patients (59 visits), 180 percent more than the proxy demonstration-only patients (25.5), and 389 percent more than all other home health patients. The increased utilization by patients who were both proxy eligible and financial outliers was driven by a higher number of home health aide visits. Both outlier-only patients and proxy-eligible outlier patients received 40 skilled nursing visits per episode, but the financial outlier-only beneficiaries received about half the number of the home health aide visits (11 visits for the financial outlier-only patients versus 22 for the proxy demonstration/financial outliers). This result is consistent with the relatively high level of functioning among the financial outliers.

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[8] The following analysis uses the utilization for the first home health outlier episode identified each year. See Appendix B for further information on outlier episodes.

[9] As noted in Chapter II, these episode results are from the first episode for the proxy-demonstration and the all other patients; but reflect the first outlier episode for the financial outlier patients.

Table IV.8. Comparison of Home Health Utilization (Average Utilization)

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier in 2005	All Other Home Health Patients
Mean Number of Visits in Episode	25.5	58.6	72.5	14.8
Standard Deviation Number of Visits in Episode	15.7	22.6	28.3	11.2
Median Number of Visits in Episode	23.0	54.0	66.0	12.0
Mean Number of Minutes in Episode	1,297.8	3,035.8	4,154.5	751.4
Standard Deviation Number of Minutes in Episode	1,156.7	2,385.6	3,204.0	764.8
Median Number of Minutes in Episode	1,065.0	2,310.0	3,180.0	555.0
Mean Number of Skilled Nursing Visits	10.8	39.9	39.7	6.5
Standard Deviation Number of Skilled Nursing Visits	7.2	22.3	27.3	5.7
Median Number of Skilled Nursing Visits	10.0	39.0	37.0	6.0
Mean Number of Skilled Nursing Minutes Per Visit	46.5	41.2	41.4	50.6
Standard Deviation Number of Skilled Nursing Minutes Per Visit	17.1	14.8	15.0	20.1
Median Number of Skilled Nursing Minutes Per Visit	45.0	39.3	39.6	48.0
Mean Number of Physical Therapy Visits	6.1	4.9	6.5	5.1
Standard Deviation Number of Physical Therapy Visits	7.0	7.2	8.3	5.7
Median Number of Physical Therapy Visits	3.0	0.0	2.0	3.0
Mean Number of Physical Therapy Minutes Per Visit	45.4	44.0	44.0	47.2
Standard Deviation of Number of Physical Therapy Minutes Per Visit	15.3	13.9	13.9	15.2
Median Number of Physical Therapy Minutes Per Visit	45.0	45.0	45.0	45.0
Mean Number of Speech Therapy Visits	0.2	0.5	0.8	0.1
Standard Deviation of Number of Speech Therapy Visits	1.6	2.8	3.5	1.1
Median Number of Speech Therapy Visits	0.0	0.0	0.0	0.0

Table IV.8 (continued)

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier in 2005	All Other Home Health Patients
Mean Number of Speech Therapy Minutes Per Visit	49.1	48.0	48.1	50.8
Standard Deviation of Number of Speech Therapy Minutes Per Visit	18.4	18.0	13.6	18.4
Median Number of Speech Therapy Minutes Per Visit	47.5	46.5	46.7	48.8
Mean Number of Occupational Therapy Visits	1.4	2.1	2.9	1.0
Standard Deviation of Number of Occupational Therapy Visits	3.5	5.1	6.0	2.6
Median Number of Occupational Therapy Visits	0.0	0.0	0.0	0.0
Mean Number of Occupational Therapy Minutes Per Visit	47.5	46.3	46.6	48.2
Standard Deviation of Number of Occupational Therapy Minutes Per Visit	15.9	14.5	14.6	16.7
Median Number of Occupational Therapy Minutes Per Visit	45.0	45.0	45.0	45.0
Mean Number of Medical Social Worker Visits	0.2	0.5	0.5	0.2
Standard Deviation of Number of Medical Social Worker Visits	0.7	1.4	1.4	0.6
Median Number of Medical Social Worker Visits	0.0	0.0	0.0	0.0
Mean Number of Medical Social Worker Minutes Per Visit	57.2	57.1	55.6	59.4
Standard Deviation of Number of Medical Social Worker Minutes Per Visit	25.3	22.5	22.2	25.8
Median Number of Medical Social Worker Minutes Per Visit	60.0	60.0	60.0	60.0
Mean Number of Home Health Aide Visits	6.8	10.7	22.0	1.9
Standard Deviation of Number of Home Health Aide Visits	9.9	17.8	25.6	5.1
Median Number of Home Health Aide Visits	0.0	0.0	17.0	0.0
Mean Number of Home Health Aide Minutes Per Visit	60.0	87.3	85.9	67.2
Standard Deviation of Number of Home Health Aide Minutes Per Visit	32.9	58.8	58.8	41.3

Table IV.8 (continued)

	Proxy Demonstration Patients Only	Financial Outlier Patients Only	Both Proxy Demonstration and Financial Outlier in 2005	All Other Home Health Patients
Median Number of Home Health Aide Minutes Per Visit	57.4	60.0	60.0	60.0
Mean Number of Days with Multiple Visits involving Different Disciplines				
1st quarter of the episode	1.5	4.3	5.1	1.2
2nd quarter of the episode	1.2	3.7	5.2	0.6
3rd quarter of the episode	1.0	2.9	5.0	0.3
4th quarter of the episode	0.9	2.2	4.7	0.2
Standard Deviation of Days with Multiple Visits Involving Different Disciplines				
1st quarter of the episode	1.9	4.3	4.4	1.7
2nd quarter of the episode	1.8	4.1	4.4	1.3
3rd quarter of the episode	1.5	3.8	4.4	0.9
4th quarter of the episode	1.5	3.4	4.4	0.6
Median Number of Days with Multiple Visits Involving Different Disciplines				
1st quarter of the episode	1.0	3.0	5.0	0.0
2nd quarter of the episode	0.0	3.0	5.0	0.0
3rd quarter of the episode	0.0	1.0	4.0	0.0
4th quarter of the episode	0.0	0.0	4.0	0.0
Sample Size	**279,935**	**37,752**	**20,972**	**1,872,786**

Source: Datalink files.

A perplexing result, though, is that relative to the proxy demonstration-only and all other home health beneficiaries, the financial outlier-only patients received a greater number of home health aide visits. These beneficiaries received 11 visits per episode compared with the proxy demonstration-only patients who received 7 visits; all other home health recipients averaged only 2 visits. This difference could, in part, be related to the availability of home support services. Although the financial outliers had higher levels of physical and cognitive functioning; they might have needed this care when they returned home, because a large minority lived on their own. It should be noted that majority of both groups received no home health aide visits; indeed the median number of visits was zero. Thus this higher number of visits was driven by a minority of patients who needed a high level of services.

For the therapy and medical social worker services, we found substantial differences in the average number of visits; however, these disciplines play a relatively small role. For example, skilled nursing and home health aide visits accounted for 87 percent of all visits provided to financial outlier patients. Thus, although the differences in receipt of therapy among the patient groups were on the order of 20 percent, they do not account for a large portion of the total visits. Although skilled nursing visits and home health aide visits were higher for the outlier patients, the outliers' actual multiple for nursing services was somewhat lower than the 40 to 7 ratio, as the average length of a skilled nursing visit was approximately 20 percent shorter than those provided to all other home health recipients. In contrast, the average length of a home health aide visit was 30 percent longer (87 versus 67 minutes); the length of therapy and medical social worker visits varied little.[10]

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[10] The statistics presented in Table IV.8 do not consider patients' conditions. The care required for certain conditions might be associated with particular disciplines. For example, patients with symptoms of the musculoskeletal or nervous systems may require more physical therapy visits than skilled nursing visits. As described in Table IV.7, those conditions are not evenly distributed across the patient groups. We explore the

The delivery of care was very different across the four patient groups. Patients who were proxy eligible and financial outliers received intensive services throughout the episode. In the first quarter of the episode (days 1–15), these beneficiaries averaged more than five days that had multiple visits from different disciplines; by the last quarter (days 45–60) the number of multiple visit days was still about five days. The financial outliers started intensively, with an average of four days with visits from different disciplines in the first quarter of the episode, but this fell to two days by the last quarter of their episode. The proxy demonstration-only patients averaged roughly one day with multiple discipline visits in each quarter of the episode. All other patients started with few multidiscipline days and the number declined fairly rapidly throughout the episode.

(continued)

relationship between two common conditions (diabetes and symptoms of the musculoskeletal or nervous systems) and service utilization patterns in Appendix C.

V. AGENCY-LEVEL ANALYSIS

One factor that may affect access to care for high-use populations is whether patients are served by agencies with particular characteristics. For example, in the Home Health Independence Demonstration, we found that nonprofit, rural agencies were more likely to participate in the demonstration. If the high-use patients are concentrated among a few agencies, or among agencies with particular characteristics, it might indicate that access to Medicare home health care is more limited for high-use patients in areas that lack these types of agencies. That is, it could signal that only agencies with a particular care delivery approach or cost structure are able and willing to admit these patients. However, if these patients are equally distributed among agencies, then we have fewer concerns about access to care.

To understand whether high-use patients are concentrated in particular agencies, we first constructed a Lorenz curve that plots the cumulative percentage of beneficiaries against the cumulative percentage of agencies. If the beneficiaries were equally distributed across agencies, the curve would actually be a straight line indicating an equitable distribution of patients across agencies. (That is, 10 percent of the agencies have 10 percent of the beneficiaries; 20 percent of the agencies have 20 percent of the beneficiaries, and so on.) In Figure V.1 we show the Lorenz curves for all agency patients, for proxy demonstration patients, and for the outlier patients.

Overall, the Medicare home health care market is concentrated with large home health agencies serving a significant proportion of the patients. Fifty percent of the agencies served approximately 10 percent of the patients; the largest 10 percent of the agencies served slightly more than half the patients.

Relative to the overall concentration of the Medicare home health market, the proxy demonstration patients showed a similar level of concentration. Fifty percent of the agencies served approximately 8 percent of the proxy demonstration patients and about 5 percent of the

Figure V.1. Concentration of Patients in HHAs (Lorenz Curves)
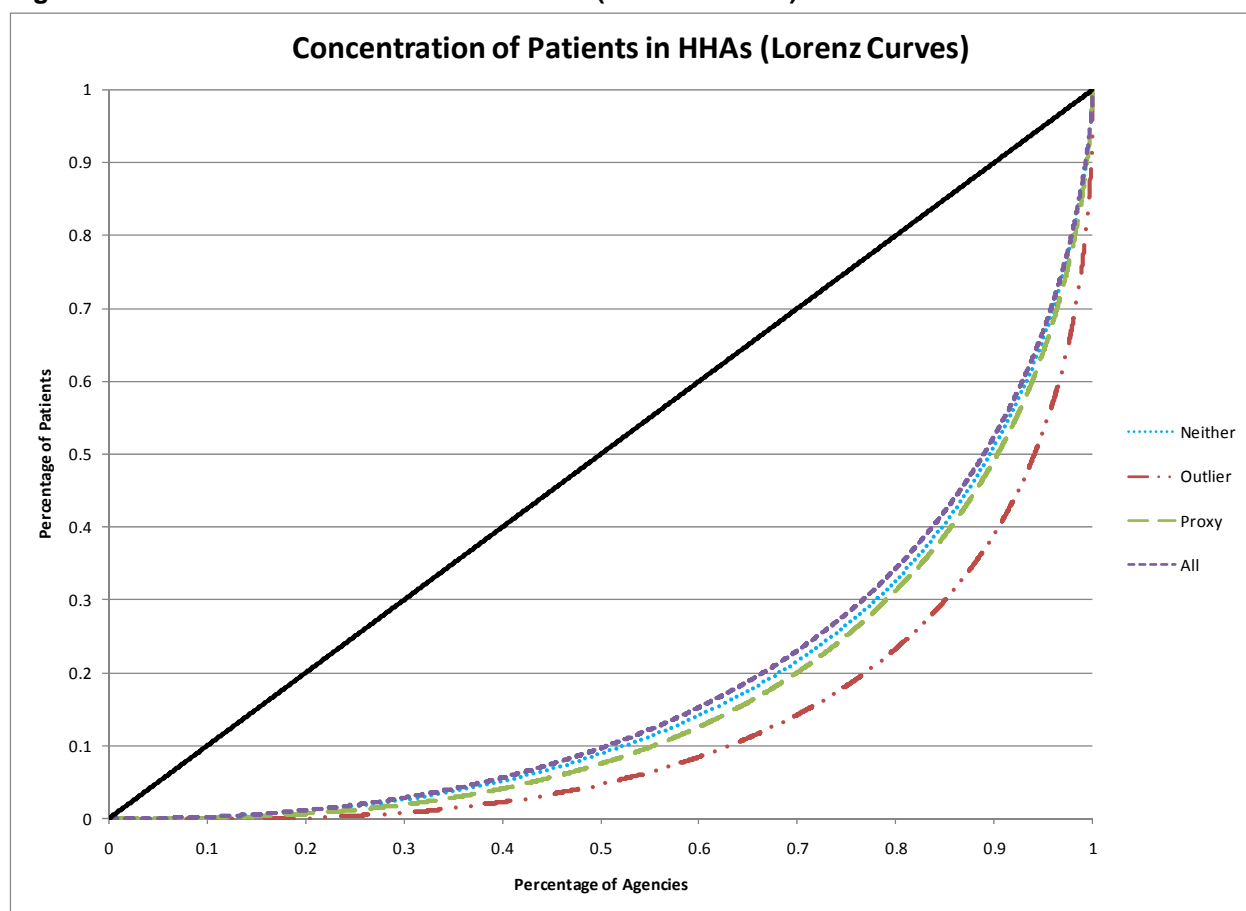
agencies did not serve any proxy demonstration patients in 2005. The 10 percent of the agencies

that served the most proxy patients provided care to roughly 49 percent of the study patients.

Although the proxy demonstration patients were a bit more concentrated, this distribution does

not suggest major systematic differences.

However, the outlier patients were more concentrated in fewer agencies relative to the

overall Medicare population. Fifty percent of the agencies served only 5 percent of the outlier

patients, with 20 percent of the agencies not serving any outlier patients during the year. In

contrast, 10 percent of the agencies provided care to roughly 60 percent of the outlier patients.

To understand which agencies were more likely to serve the proxy demonstration and

financial outlier patient populations, we defined agencies with a "high percentage of proxy

demonstration patients" as those whose percentage of proxy demonstration patients fell into the

top quartile. This group consisted of agencies that had 20 percent or more of their patients classified as proxy demonstration patients. Agencies with a "high percentage of outlier patients" were those that fell into the top 10 percent of agencies serving outlier patients (that is, agencies with roughly 8 percent or more of their patients classified as financial outliers). Chapter II provides details on the thresholds.

Agencies that had a high proportion of either proxy demonstration patients or financial outliers had a number of strikingly dissimilar characteristics compared with all other home health agencies. They were more likely to be proprietary; nearly 71 percent of the agencies that had a high percentage of proxy demonstration clients and two-thirds of the agencies with financial outliers were proprietary, and only 41 percent of the all other agencies were proprietary (Table V.1). Agencies with a high proportion of either proxy demonstration patients or financial outliers were also less likely to operate a hospice. Only 3 percent of high proxy demonstration agencies and 5 percent of the high financial outlier agencies operated a hospice; nearly 14 percent of the other agencies did so. Furthermore, these agencies served fewer Medicare home health patients in 2005 than did other agencies. On average, those agencies with a high percentage of proxy demonstration patients served a total of 314 Medicare beneficiaries; agencies with a high percentage of financial outliers served only 270 patients. In contrast, all other agencies served an average of 495 patients. Similar to the geographic distribution of patients, the agencies that served a high proportion of outlier patients were more likely to be located in urban areas, with nearly three-quarters of the agencies located in metropolitan areas. In contrast, about two-thirds of the agencies that did not serve a disproportionate share of financial outlier patients were located in urban areas.

Not surprisingly, the agencies that served a disproportionate share of proxy demonstration and outlier patients provided more visits per episode, on average, than did all other agencies. The

Table V.1. Agency Characteristics of Highly Concentrated Agencies (Percentage Unless Stated Otherwise)[a]

	Agencies with High Percentage of Proxy Demonstration Target Patients[a]	Agencies with High Percentage of Financial Outliers[b]	All Other Agencies
Agency Control			
Religious affiliation	2.1	4.2	9.1
Private	8.3	11.6	22.9
Other	4.9	7.0	11.1
Proprietary	70.6	66.1	41.0
Government	14.1	11.2	16.0
Missing	0.2	0.2	0.1
Agency Operates Branch Offices	20.1	15.9	17.2
Missing	0.2	0.2	0.1
Agency Operates a Hospice	2.8	5.3	13.7
Missing	0.2	0.2	0.1
Agency is Located in:			
Metropolitan county	63.0	74.2	64.7
County adjacent to a metropolitan county and more than 2500 residents in county	19.0	10.4	17.2
County not adjacent to a metropolitan county or county with fewer than 2500 residents	18.0	15.4	18.1
Missing	0.5	0.4	0.3
Average Number of Patients per Agency	314	270	495
Standard Deviation Number of Patients per Agency	481	1675	760
Median Number of Patients per Agency	174	56	241
Average Number of Visits per Episode (All Patients)	19.4	29.3	16.1
Average Number of Visits per Episode for Non-Proxy, Non-Outlier Patients	15.2	19.2	14.0
Standard Deviation of Number of Visits per Episode for Non-Proxy, Non-Outlier Patients	11.1	15.6	10.5
Median Number of Skilled Nursing Visits per Episode for Non-Proxy, Non-Outlier Patients	12.0	15.0	11.0
Average Number of Skilled Nursing Visits per Episode for Non-Proxy, Non-Outlier Patients	7.6	7.5	6.2
Standard Deviation of Number of Skilled Nursing Visits per Episode for Non-Proxy, Non-Outlier Patients	5.4	6.2	5.4
Median Number of Skilled Nursing Visits per Episode for Non-Proxy, Non-Outlier Patients	7.0	6.0	5.0
Average Number of Home Health Aide Visits per Episode for Non-Proxy, Non-Outlier Patients	2.8	5.6	1.7
Standard Deviation of Number of Home Health Aide Visits per Episode for Non-Proxy, Non-Outlier Patients	6.2	10.6	4.6
Median Number of Home Health Aide Visits per Episode for Non-Proxy, Non-Outlier Patients	0	0	0
Average Cost per Skilled Nursing Visit (adjusted using CMS wage index)	$138.59	$107.34	$144.39
Standard Deviation of Cost per Skilled Nursing Visit (adjusted using CMS wage index)	$44.6	$43.0	$46.65
Median Cost per Skilled Nursing Visit (adjusted using CMS wage index)	$131.88	$95.87	$138.08

Table V.1 *(continued)*

	Agencies with High Percentage of Proxy Demonstration Target Patients[a]	Agencies with High Percentage of Financial Outliers[b]	All Other Agencies
Average Cost per Home Health Aide Visit (adjusted using CMS wage index)	$59.6	$51.9	$65.0
Standard Deviation Cost per Home Health Aide Visit (adjusted using CMS wage index)	$25.30	$24.28	$28.62
Median Cost per Home Health Aide Visit (adjusted using CMS wage index)	$53.39	$44.71	$58.48
Sample Size[b]	**1,323**	**529**	**3,643**

Source: Datalink and home health agency cost reports.

Note: Agencies with a high percentage of proxy demonstration patients or financial outliers are included in both columns one and two. The presented percentages are out of the non-missing values. The percentage of missing values for each variable is included in row labeled "Missing."

[a]Agencies in the top quartile as ranked by the percentage of proxy demonstration patients served.

[b]Agencies in the top ten percent as ranked by the percentage of financial outliers served.

agencies with a high percentage of financial outliers provided nearly double the number of visits compared with those agencies that did not serve many high-use patients: 29 visits per episode in contrast to 16 visits per episode. Perhaps more meaningful, however, are the practice patterns at these agencies excluding the proxy demonstration or financial outlier patients. We calculated the average visit per episode for these agencies excluding the proxy-demonstration and financial outlier patients, and we still find that the agencies that served a high percentage of proxy demonstration or financial outlier patients provide a greater number of visits per episode, but the magnitude was much smaller. The difference in the number of visits between agencies that provided care to a high percentage of proxy demonstration patients and all other agencies—with the former providing 15 visits per episode and the latter providing 14 when outliers and proxy demonstration patients were excluded from the average. But agencies that served a high percentage of financial outlier patients averaged 19 visits per episode, 35 percent more than all other agencies (Table V.1). The difference in the average number of visits per episode for agencies was mostly attributable to home health aide visits (data not shown). Agencies with a high percentage of outlier patients averaged four more home health aide visits per episode (or 227 percent more) than all other home health agencies.

The cost per visit for agencies that provided care to a disproportionate share of financial outlier patients was substantially lower than for the other types of agencies. The cost per skilled nursing visit for those with a high proportion of financial outliers was 35 percent lower than for those agencies without high-use patients ($107 per visit versus $144) and the cost for a home health aide visit was 25 percent lower ($52 versus $65). The agencies that served a disproportionate share of proxy demonstration patients also had lower per-visit costs, but the differences were smaller, ranging from 3 to 8 percent.

In sum, we found substantial differences between agencies that provided care to a disproportionate share of financial outlier patients and other agencies. The overall distribution of financial outlier patients was more concentrated in particular agencies and these agencies had a number of unique characteristics. In particular, these agencies served fewer Medicare patients in 2005, were more likely to be located in a metropolitan county, and were much less likely to operate a hospice, suggesting these agencies might be more focused (or niche) providers. Furthermore, these agencies provided on average more skilled nursing and home health aide visits per episode. Perhaps more importantly, with 35 percent lower costs for skilled nursing visits, these agencies are in a better position to make up some of the financial loss that they incur for financial outlier patients, as the financial outlier payment formula rewards those agencies with relatively lower per-visit costs. Agencies that provide care to a high percentage of proxy demonstration patients were also different from Medicare home health providers that do not provide large amounts of such care. But the patients are not as concentrated among these agencies; hence the differences were not nearly as stark.

VI. IMPLICATIONS FOR EXTENDING THE HOME HEALTH INDEPENDENCE DEMONSTRATION

A. Lessons Learned

The Home Health Independence demonstration was designed to test whether relaxing the homebound definition would affect access to and costs of Medicare home health services care for severely ill and permanently disabled beneficiaries. A number of factors contributed to the enrollment of comparatively few beneficiaries in the demonstration. Two important reasons for the limited participation were (1) few beneficiaries qualified for the demonstration because of its eligibility restrictions and (2) agencies cited financial barriers as a key reason for their lack of participation. Agencies viewed the target demonstration population as high-use patients who would likely exceed their episode payments, and the agencies did not want to take additional financial risk by admitting more high-use patients, or to encourage those in care to remain longer than necessary.

In this study, we identified the proxy demonstration patients in a larger set of states than the three original demonstration states; we also explored how the proxy demonstration patients compared with the patients who qualified for an outlier payment. The outlier payment policy is designed to help mitigate financial barriers for high-use beneficiaries, and we wanted to understand how this policy might be working for this target group of beneficiaries. We learned the following lessons:

Lesson One: The target group that could benefit from the Home Health Demonstration is relatively small. In the previous study, we found that in the three demonstration states (Colorado, Massachusetts, and Missouri) the number of beneficiaries that could qualify for the demonstration was much lower than many had expected. In this study, we changed the way we identified the proxy demonstration patients: instead of identifying them based on their OASIS

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assessments at their point of entry into home health, we identified them using the last OASIS assessment in 2005. Using this method, we found 300,972 patients in 47 states that appeared to qualify for the demonstration based on the information provided by OASIS. Because the OASIS assessment does not include all the information needed to determine eligibility, this is an overstatement of the actual number who qualified. However, in our previous study, we found that 42 percent of the patients who appeared eligible based on their OASIS assessments were actually deemed eligible by their agencies. If the same rate applies for this identified group, it suggests that 126,408 patients in the 47 states could have qualified for the demonstration. Furthermore, we previously found that 78 percent of those who qualified for the demonstration were actually unable to leave their homes, hence they could not benefit from participation in the study. If that rate still applies for this group, it implies that 27,908 patients, or about one percent of home health patients in the 47 states, had the potential to benefit from demonstration enrollment. We caution that there are many reasons to believe that these rates might not apply for this newly estimated population. Nevertheless, it provides another piece of evidence that the number of beneficiaries who would be affected by the policy change is low relative to the 15,000 enrollment cap that Congress imposed for the three states in the demonstration.

Lesson Two: Only a small fraction of proxy demonstration patients generate outlier payments. The comparison of proxy demonstration beneficiaries and those who incurred a financial outlier episode suggested that approximately 7 percent of the proxy demonstration patients were also financial outliers. Although this 7 percent is higher than the corresponding proportion among the nondemonstration beneficiaries (of whom only 2 percent of the beneficiaries were financial outliers), they remain a small minority of the outlier patients.

Lesson Three: Financial outliers include functionally independent patients who use more resources than the permanently disabled population. Although home health agencies consider

proxy demonstration patients to be high-use patients, other groups of patients are even more expensive, on average. The proxy demonstration patients received more home health care than the nondisabled, nonoutlier beneficiary population that makes up the majority of the home health population. But financial outliers who were not proxy demonstration patients exhibited even higher utilization. They receive shorter, more frequent nursing visits; and receive longer, more frequent home health aide visits. These patients were more likely to be functionally and cognitively independent; live on their own; be recovering from a surgical wound; although we caution that a large percentage of missing values makes us less confident in these results. Differences between the proxy demonstration and outlier patient groups examined in this study suggest that outlier payments are not being used to serve the types of severely, permanently disabled beneficiaries that were addressed by the demonstration concept.

Lesson Four: Agencies that serve a disproportionate share of outlier patients have atypical characteristics. The agencies that served a disproportionate share of financial outlier patients had different characteristics and practice patterns than other agencies. These agencies were more likely to be in urban areas, serve relatively few Medicare home health patients, have no association with a hospice, have low costs per visit for skilled nursing and home health aide services, and generally provided a high level of skilled nursing and home health aide care to their patients. We cannot tell what accounts for this factor—that is, whether the agencies adopted their home health operations so they could fill these patient needs or whether the agencies have particular ways of providing care that leads to the patient receiving relatively high levels of care. However, their characteristics suggest that providing care to outlier patients might be a strategic decision on the agencies' part.

B. Limitations

This study has two important limitations. First, it uses administrative data that is collected for payment and quality monitoring purposes. As a result, not all of the variables of interest are collected at each assessment, and we missed a substantial part of some variables for the longest staying patients—whose home care spell of illness began years before the study period. Even if we were to go back to those initial assessment to "fill in" the gaps, the long time lag would raise questions about its accuracy, for over number of years functioning, caregivers and housing arrangements can and do change. However, it highlights the limitations of the data for use in comparing long-staying patients with those who are temporarily receiving home health services at a given point of time.

Second, this study only includes patients who were admitted to Medicare home health care. If the results suggested here—that financial outlier patients are served by particular "niche" agencies—then we may not observe outlier patients in areas where these agencies do not serve patients. As noted earlier; we do not know whether this is an issue; as we do not know if these agencies evolved to serve the patients who are there; or if the patients care is the result of the agency's practice pattern. Nevertheless, it suggests that there may be more "potential" financial outlier patients that have different characteristics that we observed here.

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APPENDIX A

DETAILS OF THE HOME HEALTH AGENCY
OUTLIER PAYMENT POLICY

CMS's outlier payment policy mitigates the largest financial losses for home health agencies. For each 60 day home health episode, CMS establishes an "outlier threshold" amount, which is equal to the case-mix adjusted episode payment amount plus a fixed dollar loss amount.[1] The fixed dollar loss amount is the same for all episodes and is equal to the fixed dollar loss rate (set each year) times the episode rate.

The amount of the outlier payment is the proportion of the difference between the outlier threshold amount and an imputed cost for the patient that is calculated by multiplying standard per-visit prices per discipline by the number of visits provided per discipline. This can be written as:

$$Outlier\ Payment = \left[\sum P_i \ x \ N_{ik} - Episode_k - FDL \right] x \ LSR$$

Where P_i is the standard price per visit for discipline i

N_{ik} is the number of visits rendered of discipline i for episode k

Episode$_k$ is the case-mix adjusted payment amount for episode k

FDL is the fixed dollar loss amount, which is equal to the fixed dollar loss rate time the standard episode payment, and

LSR is the loss sharing ratio, and

all amounts are wage-adjusted.

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[1] For certain episodes, the partial episode payment (PEP) adjustment amount or the total significant change in condition amount may be used.

When CMS developed the prospective payment system (PPS), it set the fixed dollar loss amount rate to 1.13 and the loss-sharing ratio at 0.8, which meant that for any episode in which the standardized costs exceeded the episode payment amount plus 113 percent of the standard episode payment, CMS would cover 80 percent of the losses. Under this policy, in the 2001 to 2003 period, outlier episodes represented about 3 percent of the total episodes, and about 3 percent of total home health payments.[2] Subsequently, CMS lowered the fixed dollar loss amount to 0.70 with a loss-sharing ratio of 0.8, which CMS estimated would result in an outlier payment amount of 5 percent. CMS believed that by increasing the number of episodes that qualified for cost sharing, it would improve access to care. In 2006, CMS updated the fixed dollar loss amount to 0.65, based on an analysis of 2004 Medicare home health claims; the amount was further refined to 0.67 in 2007 and 0.89 in 2008. However, under these rules, outlier payments increased from 4.1 percent in 2005, to 5 percent in 2006, to 6.4 percent in 2007. In preparing for the 2009 update, CMS estimated that outlier payments under the current rules would total 10.26 percent of total Medicare payments and it would have to raise the fixed dollar loss amount to 2.71 in order to meet Congress' 5 percent target. Because the underlying growth in outlier episodes was the result of excessive outlier payments in particular parts of the country, which may have indicated fraud, CMS maintained the ratio of 0.89 to ensure access to services across the country.

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[2] Medicare Program; Home Health Prospective Payment System Rate Update for Calendar Year 2010. 42 CFR Parts 409, 424, 484 and 489.

APPENDIX B

**WHAT IS THE PRACTICE PATTERN FOR ALL
OUTLIER EPISODES?**

The analysis presented in the report compares the proxy demonstration patients with the financial outlier patients, where we used the utilization information from the first 60-day episode that a home health recipient had in 2005 as the basis for the financial outlier. However, it is also of interest to understand what the typical home health outlier episode looks like—allowing for the same individual to appear multiple times. To understand this, we identified all of the additional outlier episodes that the financial outlier patients had that occurred in calendar year 2005.

We identified 89,872 outlier episodes in 2005 for the 58,724 individuals who had an episode that qualified as a financial outlier. Thus, the average beneficiary who had an episode that qualified as a financial outlier averaged one-and-a-half financial outlier episodes. This, of course, reflects a majority of patients who had a single financial outlier episode; while others had multiple episodes.

One question is whether patients entered home health with such high needs, or did these needs develop while they were in care. To understand this, the Datalink file starts a "spell of illness" when a patient enters home health care after a period of 60 days without Medicare home health care. It then counts each subsequent episode in the spell of illness for those patients until a new 60 day period with Medicare home health services is found. A new spell of illness is then started if and when the individual starts receiving care again. Thus, by identifying the episode number within the spell of illness, we can understand when the high-use period occurred.

A substantial minority of outlier episodes (nearly 40 percent) occurred as the first episode in the spell of illness, and 16 percent occurred as the second episode (Table B.1). However, many financial outlier episodes occurred deep in a spell of illness. Twenty-five percent occurred during the sixth episode of care in the spell of illness or later, which implies that a substantial minority of these episodes occurred a year after the patient was first admitted to home health

Table B.1. Distribution of "Outlier" Episodes in Spell of Illness

	Financial Outlier Patients Only
Percent of first episodes	39.8
Percent of second episodes	16.2
Percent of third episodes	8.8
Percent of fourth episodes	5.7
Percent of fifth episodes	4.1
Percent of episodes greater than fifth	25.4
Total	**100**

care. Indeed, one of the episodes occurred in the 55th episode of care, nearly nine years after first entering home health care. Thus, financial outlier episodes can occur at many different junctures in a spell of illness and an agency might admit such a patient without knowing that the patient will need such a high level of care.

Examining the care patterns, we find that when averaged across all outlier episodes in 2005, the number of visits per episode is greater than the first episode for the financial outlier only population, but less than the number of visits for the proxy-demonstration/financial outlier population. (See Table B.2). The average number of visits for all outlier episodes in 2005 was 70 visits, in contrast to the 59 visits for the outlier only patients and 73 visits for the proxy-demonstration/financial outlier population (Table IV.8). Averaging both the proxy-demonstration patients and the financial outlier only patients from Table IV.8, we find that the average number of visits for all of the first observed outlier episodes in 2005 is 64 visits, with 40 being skilled nursing visits, 17 being home health aide visits, and 5 being physical therapy visits. Thus, the average number of visits per episode, when including the multiple financial outliers episodes per person, is 9 percent higher (70 visits from Table B.2 versus an average of 64), mostly due to more skilled nursing visits (45 from Table B.2 versus an average of 40) and home health aide visits (17 visits from Table B.2 versus an average of 15), and with one less physical therapy visits (4 visits from Table B.2 versus and average of 5).

Table B.2. Characteristics of Outlier Episodes

	Any Outlier Episode in 2005
Mean Number of Visits in Episode	69.8
Median Number of Visits in Episode	60.0
Standard Deviation of Number of Visits in Episode	30.9
Mean Number of Minutes in Episode	3,693.5
Median Number of Minutes in Episode	2,670.0
Standard Deviation of Number of Minutes in Episode	3,028.4
Mean Number of Skilled Nursing Visits	45.4
Median Number of Skilled Nursing Visits	43.0
Standard Deviation of Number of Skilled Nursing Visits	29.6
Mean Number of Skilled Nursing Minutes Per Visit	39.6
Median Number of Skilled Nursing Minutes Per Visit	37.5
Standard Deviation of Number of Skilled Nursing Minutes Per Visit	14.9
Mean Number of Physical Therapy Visits	4.3
Median Number of Physical Therapy Visits	0.0
Standard Deviation of Number of Physical Therapy Visits	7.1
Mean Number of Physical Therapy Minutes Per Visit	43.9
Median Number of Physical Therapy Minutes Per Visit	45.0
Standard Deviation of Number of Physical Therapy Minutes Per Visit	13.9
Mean Number of Speech Therapy Visits	0.5
Median Number of Speech Therapy Visits	0.0
Standard Deviation Number of Speech Therapy Visits	2.7
Mean Number of Speech Therapy Minutes Per Visit	48.0
Median Number of Speech Therapy Minutes Per Visit	46.7
Standard Deviation of Number of Speech Therapy Minutes Per Visit	15.7
Mean Number of Occupational Therapy Visits	1.8
Median Number of Occupational Therapy Visits	0.0
Standard Deviation of Number of Occupational Therapy Visits	4.8
Mean Number of Occupational Therapy Minutes Per Visit	46.3
Median Number of Occupational Therapy Minutes Per Visit	45.0
Standard Deviation of Number of Occupational Therapy Minutes Per Visit	14.6
Mean Number of Medical Social Worker Visits	0.4
Median Number of Medical Social Worker Visits	0.0
Standard Deviation of Number of Medical Social Worker Visits	1.3
Mean Number of Medical Social Worker Minutes Per Visit	56.0
Median Number of Medical Social Worker Minutes Per Visit	60.0

Table B.2 (continued)

	Any Outlier Episode in 2005
Standard Deviation of Number of Medical Social Worker Minutes Per Visit	22.6
Mean Number of Home Health Aide Visits	17.4
Median Number of Home Health Aide Visits	2.0
Standard Deviation of Number of Home Health Aide Visits	26.2
Mean Number of Home Health Aide Minutes Per Visit	87.9
Median Number of Home Health Aide Minutes Per Visit	60.6
Standard Deviation of Number of Home Health Aide Minutes Per Visit	59.1
Mean Number of Days with Multiple Visits Involving Different Disciplines	
1st quarter of the episode	5.1
2nd quarter of the episode	4.9
3rd quarter of the episode	4.4
4th quarter of the episode	3.9
Median Number of Days with Multiple Visits Involving Different Disciplines	
1st quarter of the episode	4.0
2nd quarter of the episode	4.0
3rd quarter of the episode	3.0
4th quarter of the episode	2.0
Standard Deviation of Number of Days with Multiple Visits Involving Different Disciplines	
1st quarter of the episode	5.0
2nd quarter of the episode	4.9
3rd quarter of the episode	4.9
4th quarter of the episode	4.8
Sample Size: Episodes	**89,872**

APPENDIX C

CONDITION-SPECIFIC HOME HEALTH

To understand how a patient's condition might affect the care pattern, we examined the care for two very common diagnoses: diabetes and symptoms of the nervous and musculoskeletal systems (Table C.1). The number of visits per initial episode for outlier-only patients with these primary diagnoses was substantially higher than for the overall outlier-only population. The number of visits for outlier-only diabetic patients (71 visits) was 20 percent larger than the number of visits for the overall outlier population (59 visits; see Table C.1, IV.8). For patients with symptoms of the musculoskeletal or nervous systems, the difference was 15 percent (68 versus 59 visits).

We also found that outlier patients with a primary diagnosis of diabetes had high service utilization relative to other diabetic home health beneficiaries. Diabetic outlier-only patients had more than three times as many visits as diabetic proxy demonstrations patients did (71 versus 23 visits) and almost five times as many visits than did all other diabetic patients (15 visits). For proxy-eligible beneficiaries with an outlier episode, the differences were even larger; these beneficiaries averaged about 88 visits per episode. This suggests that although diabetics contribute to the high level of utilization among outlier patients, factors other than diabetes are contributing to their high utilization relative to the other patient groups.

For diabetic patients, skilled nursing and home health aide visits were the most common, but a consistent pattern in the average length of the visits associated with these disciplines did not emerge across the patient groups. Outlier-only patients had more than six times as many skilled nursing visits as did the nonoutlier, nonproxy patients. The average outlier-only minutes per skilled nursing visit were substantially lower than for nonoutlier, nonproxy diabetic patients (37.5 minutes versus 50 minutes). On the other hand, for home health aide visits we find that although financial outlier-only patients had a higher number of home health visits on average

Table C.1. Comparison of Home Health Utilization by Primary Diagnosis

	Diabetes Mellitus				Symptoms involving Nervous and Musculoskeletal Systems			
	Proxy	Outlier	Both	Neither	Proxy	Outlier	Both	Neither
Mean Number of Visits in Initial Episode	23.5	71.2	88.2	15.1	30.1	67.8	76.0	15.8
Median Number of Visits in Initial Episode	21.0	60.0	76.0	12.0	28.0	66.0	74.0	14.0
Standard Deviation of Number of Visits in Initial Episode	14.6	33.6	40.1	11.5	14.3	21.5	22.3	10.6
Mean Number of Minutes in Initial Episode	1,156.2	3,173.7	3,880.2	776.3	1,476.8	3,916.6	4,406.8	789.1
Median Number of Minutes in Initial Episode	945.0	2,385.0	3,150.0	540.0	1,275.0	3,210.0	3,585.0	630.0
Standard Deviation of Number of Minutes in Initial Episode	1,018.4	2,414.8	2,836.5	845.4	1,070.9	2,757.8	3,038.9	700.5
Mean Number of Skilled Nursing Visits	12.4	57.1	68.0	9.4	8.3	25.6	25.7	3.7
Median Number of Skilled Nursing Visits	11.0	50.0	58.0	8.0	8.0	20.0	19.0	3.0
Standard Deviation of Number of Skilled Nursing Visits	7.5	33.0	38.7	6.3	6.1	19.1	20.4	4.2
Mean Number of Skilled Nursing Minutes Per Visit	45.9	37.5	35.1	50.0	47.0	42.8	43.9	51.3
Median Number of Skilled Nursing Minutes Per Visit	45.0	35.2	32.8	47.7	45.0	41.3	41.8	48.0
Standard Deviation of Number of Skilled Nursing Minutes Per Visit	16.8	16.8	12.8	19.1	18.5	12.9	25.6	21.0
Mean Number of Physical Therapy Visits	3.9	3.2	3.8	2.8	12.6	14.3	16.0	9.0
Median Number of Physical Therapy Visits	0.0	0.0	0.0	0.0	12.0	15.0	17.0	9.0
Standard Deviation of Number of Physical Therapy Visits	5.8	5.7	6.5	4.7	5.9	8.1	8.1	5.1
Mean Number of Physical Therapy Minutes Per Visit	45.1	44.1	41.3	46.0	45.0	44.5	45.6	48.2
Media Number of Physical Therapy Minutes Per Visit	45.0	45.0	42.6	45.0	45.0	45.0	45.0	47.1
Standard Deviation of Number of Physical Therapy Minutes Per Visit	14.9	18.2	11.3	15.2	14.7	11.6	25.3	14.8
Mean Number of Speech Therapy Visits	0.1	0.1	0.1	0.0	0.3	1.5	1.9	0.1

Table C.1 (continued)

	Diabetes Mellitus				Symptoms involving Nervous and Musculoskeletal Systems			
	Proxy	Outlier	Both	Neither	Proxy	Outlier	Both	Neither
Median Number of Speech Therapy Visits	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Standard Deviation of Number of Speech Therapy Visits	0.8	1.3	1.3	0.6	1.5	4.6	5.0	0.8
Mean Number of Speech Therapy Minutes Per Visit	48.3	46.3	45.7	49.0	48.4	47.9	48.1	50.5
Median Number of Speech Therapy Minutes Per Visit	45.0	45.0	45.0	46.0	46.5	46.0	48.0	48.8
Standard Deviation of Number of Speech Therapy Minutes Per Visit	17.6	12.3	12.9	15.4	16.1	14.1	12.8	19.6
Mean Number of Occupational Therapy Visit S	0.8	1.1	1.1	0.6	2.4	7.3	8.7	1.3
Median Number of Occupational Therapy Visit S	0.0	0.0	0.0	0.0	0.0	3.0	7.0	0.0
Standard Deviation Number of Occupational Therapy Visit S	2.5	3.4	3.6	2.0	4.3	8.3	8.6	2.8
Mean Number of Occupational Therapy Minutes Per Visit	46.7	46.3	45.2	48.2	46.8	45.9	46.1	48.2
Median Number of Occupational Therapy Minutes Per Visit	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Standard Deviation of Number of Occupational Therapy Minutes Per Visit	15.0	13.1	14.3	17.3	15.2	11.9	15.1	17.0
Mean Number of Medical Social Worker Visits	0.2	0.4	0.3	0.3	0.3	0.8	0.8	0.1
Median Number of Medical Social Worker Visits	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Standard Deviation of Number of Medical Social Worker Visits	0.7	1.3	1.0	0.7	0.7	1.7	1.7	0.5
Mean Number of Medical Social Worker Minutes Per Visit	55.5	56.0	52.9	58.3	56.3	57.1	54.8	59.6
Median Number of Medical Social Worker Minutes Per Visit	60.0	60.0	52.5	60.0	60.0	57.0	57.0	60.0
Standard Deviation of Number of Medical Social Worker Minutes Per Visit	26.3	19.1	20.2	25.2	25.7	23.8	19.4	26.9

Table C.1 (continued)

	Diabetes Mellitus				Symptoms involving Nervous and Musculoskeletal Systems			
	Proxy	Outlier	Both	Neither	Proxy	Outlier	Both	Neither
Mean Number of Home Health Aide Visits	6.2	9.2	14.8	2.0	6.3	18.4	23.0	1.7
Median Number of Home Health Aide Visits	0.0	0.0	1.0	0.0	0.0	16.0	20.0	0.0
Standard Deviation of Number of Home Health Aide Visits	9.4	17.3	20.5	5.6	8.8	20.2	21.3	4.6
Mean Number of Home Health Aide Minutes Per Visit	56.7	92.7	86.1	70.1	58.0	83.0	79.9	64.3
Median Number of Home Health Aide Minutes Per Visit	55.4	60.0	60.0	60.0	55.3	60.0	60.0	59.4
Standard Deviation of Number of Home Health Aide Minutes Per Visit	30.5	62.5	63.5	44.8	32.4	58.2	59.6	38.7
Mean Number of Days with Multiple Visits involving Different Disciplines								
1st quarter of the episode	1.2	5.5	7.0	1.0	2.1	5.7	5.9	1.6
2nd quarter of the episode	1.0	5.	6.9	0.6	1.7	5.6	6.1	0.7
3rd quarter of the episode	0.8	4.3	6.8	0.3	1.3	4.7	5.8	0.3
4th quarter of the episode	0.7	3.7	6.5	0.2	1.1	3.6	5.3	0.1
Median Number of Days with Multiple Visits involving Different Disciplines								
1st quarter of the episode	0.0	4.0	6.0	0.0	2.0	6.0	6.0	1.0
2nd quarter of the episode	0.0	3.0	6.0	0.0	1.0	6.0	6.0	0.0
3rd quarter of the episode	0.0	2.0	6.0	0.0	1.0	5.0	6.0	0.0
4th quarter of the episode	0.0	1.0	5.0	0.0	0.0	3.0	5.0	0.0
Standard Deviation of Number of Days with Multiple Visits involving Different Disciplines								
1st quarter of the episode	1.7	5.5	5.8	1.6	1.9	3.1	3.1	1.7
2nd quarter of the episode	1.6	5.5	5.8	1.2	1.8	3.2	3.1	1.3
3rd quarter of the episode	1.4	5.3	5.9	0.9	1.6	3.3	3.3	0.8
4th quarter of the episode	1.3	5.2	5.9	0.7	1.5	3.3	3.3	0.6

than did other nonoutlier, nonproxy diabetic patients (nine versus two), the visits were longer for the outlier-only beneficiaries (93 minutes versus 70).

Turning to patients with a primary diagnosis of symptoms involving nervous and musculoskeletal systems, we found a different practice pattern: the higher number of visits was driven by greater numbers of therapy and aide visits. Compared with the service utilization of outlier-only patients regardless of condition (Table IV.8), outlier-only patients with musculoskeletal symptoms averaged 180 percent more physical therapy visits (14 visits versus 5), 200 percent more speech therapy visits (1.5 versus 0.5 visits), 247 percent more occupational therapy visits (7 visits versus 2), and 63 percent more home health aide visits (18 versus 11 visits) (See Tables C.1 and IV.8, respectively.) The high level of involvement of these therapy providers for this group is unsurprising given that conditions such as tremors or temporary paralysis are associated with this diagnosis code. However, when we compared musculoskeletal symptom patients with an outlier episode with proxy demonstration patients and all other home health recipients with the same primary diagnosis, we found that the outlier patients received a substantially larger number of skilled nursing visits (26 versus 8 for the proxy demonstration patients and 4 for the nonoutlier, nonproxy patients). We also discovered that the average skilled nursing visit was shorter for the financial outliers (roughly 43 minutes versus 51 for all other home health patients) and the average home health aide visit was longer (83 for outlier–only patients and 80 for proxy-eligible outliers versus 64), but these differences were not as large as those found among the diabetic patients.

Thus, we found some similarities among the outlier patients—namely that they received relatively short nursing visits and long home health aide visits. But these care patterns suggest there are likely to be many complex factors underlying their utilization differences.