Concordance between planned and approved visits during initial home care

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Based on little prior information and a brief interview, the Medicare home health agency intake case manager must estimate the types and amounts of services a new client will require during the first 60 days of home care.

We systematically examined the concordance between types and amounts of planned services with those actually approved and reimbursed during the first 60 days of care for a sample of 2,431 clients during 1986.

Overall, the mean number of planned visits during the first 60 days was 24.76, and the mean number of approved visits was 15.95. Approved visits as a percent of planned visits averaged 64.4.

Introduction

Medicare's home health care program expanded greatly during the 1980s (U.S. General Accounting Office, 1989). Spending increased 87 percent between fiscal years 1983 and 1989, from $1.5 billion to $2.8 billion. The number of Medicare-certified home health agencies (HHAs) increased 43 percent during this same period, from approximately 4,250 to 6,100. Total visits increased 19 percent, from 35.7 million to 42.6 million. The number of beneficiaries receiving services, however, increased only 8 percent, from approximately 1.3 million to 1.4 million.

Medicare home health services are available to beneficiaries who are homebound, under a physician's care, and need part-time or intermittent skilled nursing care, physical therapy, or speech therapy.

Home care has often been touted as an integral component of a continuum of care for people experiencing increasing frailty and debility (Branch, 1985; Weissert, Wan, and Livieratos, 1980; Kane and Kane, 1987). Indeed, previous research has demonstrated that the risk factors associated with subsequent medical home care are very similar to the risk factors of subsequent nursing home placement (Branch et al., 1988). Advancing age, physical functioning limitations, and cognitive functioning limitations are common risk factors for both forms of long-term care. Living alone, however, seems to be predictive of institutional long-term care use only.

As a pre-requisite to possible policy redirections aimed at promoting more efficient and effective home care during an era of increasingly constrained health care expenditures, previous research has described the characteristics of HHA clients and the types and amounts of visits and charges during a total episode of care (Branch et al., 1990). The average HHA client received 23 visits during the total episode, with a mean total charge in 1986 of $1,238. Approximately one-half the visits were from skilled nurses, and one-quarter were from home health aides who typically help patients bathe, groom, transfer, toilet, take self-administered medications, and exercise. As expected, primary diagnosis and areas of limitations demonstrated systematic associations with both the type and amount of home care services.

Among those with the most extensive care were the 3 percent who had been nursing home patients prior to receiving home care, the 12 percent restricted to wheelchairs, the 6 percent who had paralysis limitations, the 8 percent with cerebrovascular diseases as a primary diagnosis, and the 4 percent with hip fractures as a primary diagnosis. Among those with the least extensive care were those Medicare beneficiaries under 65 years of age (6 percent); those not taking any medications (5 percent); those with only one limitation listed (10 percent); and those with a primary diagnosis of either digestive system disease (6 percent), arthropathies (5 percent), ischemic heart disease (5 percent), or chronic obstructive pulmonary disease (4 percent).

The Medicare home health care manager is faced with a complex task at intake. Based on often limited referral information and a relatively brief exchange with the prospective client and/or the client's informal support, the intake care manager must assess the client, formulate a care plan, and initiate services. The present analysis systematically examines the concordance between the planned services as initially formulated by the intake clinician and the actual services as approved for Medicare reimbursement during the first 60 days of care. If the concordance is acceptable, then it is possible to consider the treatment plans (and assume they are treatment recommendations) in the process of reconsidering the fee-for-service payment approach currently used in Medicare home health care.

In order to minimize the variance in service use that could characterize clients in the last months prior to death, or that could be attributable to multiple intake professionals, this analysis is limited to beneficiaries who survived the first 60 days after their initial certification for HHA services and had only a single HHA provider during that period.

Data

Sites

The data for this analysis were obtained in 1987 from a sample of the Medicare-certified HHAs that the Health Care Financing Administration (HCFA) had recruited in 1985 to participate in a HHA prospective payment

demonstration that was not implemented. These agencies had been recruited within 10 States (California, Connecticut, Florida, Illinois, Massachusetts, Ohio, Pennsylvania, Tennessee, Texas, and Wisconsin) from the universe of known HHAs in those States that met three inclusion criteria (urban location, non-government operated, and established before January 1, 1983). A total of 235 agencies met the criteria and were approached; 127 agencies expressed initial interest in participating in this data collection effort; and of these, 86 actually submitted data. Participation consisted of selecting a sample of patients, submitting copies of their initial Home Health Certification and Plan of Treatment form (HCFA Form-485; Figure 1) and the accompanying Medical Update and Patient Information form (HCFA Form-486; Figure 2), and submitting copies of the agency's Medicare Cost Report for fiscal year 1986.

Subjects

From each of the participating agencies, a systematic sample of clients was selected, designed to yield approximately 80 to 200 Medicare HHA clients per agency who were admitted for a new episode of care during calendar year 1986. Of those clients for whom data were received, only those who had verified Medicare claim numbers ending in 0, 4, 5, or 8 (and therefore, whose complete HHA billing information would be available on the 40-percent Home Health Agency Bill Record File) and for whom data on approved visits were actually received were considered conditionally eligible for this analysis ($N = 3,614$ clients).

Although the sampling fraction for each HHA varied, it is not necessary to weight the individual responses by the inverse of the sampling fraction, because the analytic objective here is not population estimation. Rather the goal of the analysis is to describe the concordance between planned and approved visits among these clients and to examine whether any client characteristic is systematically associated with a discrepancy between planned and approved visits.

Episodes and planned visits

For each client receiving initial HHA care, HCFA Forms-485 and 486 are completed to establish medical necessity for home health care and to document treatment plans and other aspects of the case. The Form 485, covering a 60-day certification period, is completed once at intake; Form 486 is completed with the first bill and updated periodically as necessary. The forms also include a certification "from" and "to" date. However, because of inconsistencies in agency practice, the Form 485 "from" date was found not necessarily to be the starting date of a new episode for every client. Therefore, for this analysis, the operational definition of a new episode was that the client had not been receiving Medicare HHA services for the preceding 60 days.

The operational definition of the start of a new episode relied on the 40-percent Home Health Agency Bill Record File in the following way. Starting with the Form 485 "to" date, each client's billing record was examined retrospectively to identify a 60-day interval with no home health bills. The day after this 60-day billing gap was designated as the episode start date for this analysis. For nearly three-fourths of the conditionally eligible clients (72 percent or 2,615 clients), the billing record episode start date as defined was identical to the Form 485 "from" date; and for another 7 percent (or 258 clients), the billing record start date was within 5 days of the Form 485 "from" date. Among these 2,873 clients, 244 expired within 60 days, and 198 of the survivors were excluded because they had multiple home health care provider agencies during the episode. This left the 2,431 clients who comprise the analytic group for this analysis. Treatment plans for every 60-day period are recorded on a series of HCFA Form-486s for each client. Planned visits for this analysis were taken from the first Form 486 for each client.

Approved visits

The billing record file included all claims processed through September 1987, which is 9 months after the start date of the last possible new episode during the study window of calendar year 1986. However, previous experience has shown that a 6-month lag in the processing of home health claims can exist, which could cause some minor distortions in episodes that began in late 1986.

Approved visits are those that were provided and approved for payment and were calculated from the 40-percent Home Health Agency Bill Record File. However, the 60-day certification period only infrequently coincides with a provider's billing cycle. Billing cycles typically correspond to calendar months, and certification periods typically are distributed throughout the calendar months. Consequently, approved visits were apportioned on a prorated basis to the certification interval based on the proportion of the certification days in its billing period. For example, if a certification interval went from July 15 to September 15, if the provider's billing cycle went from September 1 to September 30, and if a total of 10 visits were billed in September, we prorated the approved visits over the month ((15 days ÷ 30 days) × 10 visits), providing a recertification interval followed.

Type-of-service categories included skilled nursing, home health aide, physical therapy, occupational therapy, speech therapy, medical social work services, and other.

It is possible for approved visits to exceed the initially planned visits; in these instances, further justification in subsequent Form 486s would serve as authorization. In most instances, however, the intake case manager uses the initial Forms 485 and 486 to establish authorization for all subsequent home care service use. In practice, there is some incentive for the case manager to err in the direction of initially authorizing extra services than to err in the opposite direction of authorizing too few services.

Client characteristics

Forms 485 and 486 were designed to elicit information in all items. Missing information was infrequent. The Form 485 provided information on sex and age (categorized as under 65 years of age, 65-74 years, 75-84 years, and 85 years or over in this analysis). Admission source had four categories: "from the

Figure 1

HOME HEALTH CERTIFICATION AND PLAN OF TREATMENT

1. Patient's Name and Address	2. Patient's HI Claim Number
	3. Medical Record Number
4. Dates: Start of care and verbal order for SOC	5. Certification Period: From:　　　To:
6. Home Health Agency Name and Address	7. Principal Diagnosis: Narrative, Dates of Onset/Exacerbation, ICD-9-CM Code ☐☐☐.☐☐
	8. Surgical Procedure(s) Relevant to Care: Narrative, Date, ICD-9-CM Code ☐☐☐.☐☐

9. Other Pertinent Diagnosis – Narrative, Dates of Onset/Exacerbation, ICD-9-CM Code(s)

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☐☐☐.☐☐　　　　　☐☐☐.☐☐

10.

Functional Limitations

- ☐ Amputation
- ☐ Bowel/Bladder
  - ☐ (Incontinence)
- ☐ Contracture
- ☐ Hearing
- ☐ Paralysis
- ☐ Endurance
- ☐ Ambulation
- ☐ Mental
- ☐ Speech
- ☐ Vision
- ☐ Respiratory
- ☐ Other (Specify)

Activities Permitted

- ☐ Bedrest
- ☐ Complete
- ☐ BRP
- ☐ Up as tolerated
- ☐ Transfer Bed/Chair
- ☐ Exercise Prescribed
- ☐ Partial Weight Bearing
- ☐ Independent at Home
- ☐ Crutches
- ☐ Cane
- ☐ Wheelchair
- ☐ Walker
- ☐ No Restrictions
- ☐ Other (Specify)

11. Safety Measures:

12. Orders for Services and Treatments (Specify modality, amt/freq/dura)	13. Medications: Doses/Frequency/Route　　(N) New　　(C) Changed

14. Mental Status:

☐ Oriented　　☐ Forgetful　　☐ Disoriented　　☐ Agitated

☐ Comatose　　☐ Depressed　　☐ Lethargic　　☐ Other

15. Nutritional Requirements:

16. Medical Supplies & DME Ordered	17. Allergies
18. Goals/Rehabilitation Potential/Discharge Plans	19. Significant Clinical Findings/Summary from each discipline

20. Prognosis:　☐ Poor　　☐ Guarded　　☐ Fair　　☐ Good　　☐ Excellent

| 21. Attending Physician's Name and Address | 22. PHYSICIAN CERTIFICATION:

I ☐ certify ☐ recertify that the above home health services are required and are authorized by me with a written plan for treatment which will be periodically reviewed by me. This patient is under my care, is confined to his home, and is in need of intermittent skilled nursing care and/or physical or speech therapy or has been furnished home health services based on such a need and no longer has a need for such care or therapy but continues to need occupational therapy. |
| 23. Attending Physician's Signature and Date | |

Form HCFA-485(C4) (4-85)

Figure 2

MEDICAL UPDATE AND PATIENT INFORMATION

1. Patient's Name	2. HIC No.　　　3. Sex　□ M　□ F

4. Date of Birth	5. Medicare Covered?　□ Yes　□ No	6. Period Covered or Certification Period　From:　Through:

7. Provider Name and Number	8. Place of Treatment, if Other than Home (Name and Address)

9. Are services related to any accident or employment related Injury?　□ Yes　□ No	10. Date abd Reason Agency Last Contacted Physician	11. Is the patient receiving additional medically reasonable and necessary skilled care pursuant to a Physician's Plan of Treatment paid for by other than Medicare?　□ Yes (Specify)　□ No

12. Dates of Last Inpatient Stay　From:　To:	Type of Facility	13. Date Physician Last Saw Patient

SPECIFIC SERVICES AND TREATMENTS (CODES ON REVERSE)

TOTAL VISITS	SERVICES	SPECIFIC TREATMENT ORDERS	FREQUENCY AND DURATION	TX CODE

15. Updated Information: New Orders/Treatments/Clinical Facts

16. Functional Limitations/Rehabilitation Potential/Goals (Each Discipline)

17. 　　　　　　　　　　　　　　　　HOMEBOUND

A. Reason Homebound – Narrative:

B. Indicate any times when Home Health Agency made a visit and the patient was not home and reason why if ascertainable	C. Specify any known medical and/or non-medical reasons the patient regularly leaves home and feequency of occurrence

18. Is there an available, able and willing care giver?　□ Yes (Specify)　□ No	19. Unusual Home/Social Environment

20. Does your Agency have any supplementary plans of treatment on file from a physician other than the referring physician or from other specialists for care being given the patient by your agency?　□ Yes　□ No　If Yes, Please explain briefly

21. Other DME Available for Use	22. Signature of Nurse or Therapist Completing or Reviewing Form	Date

Form HCFA-486(C4) (4-85)

community," "from a hospital (medical)," "from a hospital (surgical)," or "from a nursing home." Mobility restrictions were categorized based on responses to a Form 485 item indicating activities permitted; the four categories developed for this analysis were "complete bedrest," "wheelchair-bound," "required cane or crutch or walker," or "has none of the previous three restrictions." Information from Form 485 on number of medications was categorized in this analysis as "none," "1-3 current medications," "4-6 current medication," or "7 or more." Nutritional status was obtained from the Form 485 notation of physician's orders for special diets; and each client was categorized as needing "a low sodium diet," "another special diet," or "no special diet." Information on functional limitations in each of the following 11 areas were available from Form 485: endurance, ambulation, respiration, vision, hearing, mental, bowel or bladder, speech, paralysis, contracture, or amputation. The principal diagnosis, based on the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM), was reported on Form 485, and the 16 most common diagnosis categories are included in this analysis. The individual ICD-9-CM codes included in each category are shown in Table 1. Malignant neoplasms was the first most common diagnosis (11.5 percent of the clients), and chronic skin ulcers was the 16th most common diagnosis (2.5 percent of the clients).

Results and discussion

Table 2 presents the mean number of planned visits and approved visits during the first 60 days of the episode among surviving clients with a single Medicare HHA provider. The Medicare HHA intake worker

Table 1

16 most common diagnosis categories from the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICM-9-CM) and their codes

Diagnosis category	ICD-9-CM code
Arthropathies	710-719
Bone fractures	800-819, 822-829
Cerebrovascular disease	430-438
Chronic obstructive pulmonary disease	490-496
Chronic ulcers of the skin	707
Diabetes mellitus	250
Disease of the central nervous system	780, 781, 320-326, 330, 331, 333-349
Disease of the circulatory system	390-398, 415-417, 440-459
Disease of the digestive system	520-579, 787.0-787.5, 787.7-787.9
Disease of the genitourinary system	580-598, 600-629, 788.0-788.2, 788.4-788.9
Hip fractures	820-821
Hypertensive diseases	401-405
Injury and poisoning	850-869, 900-999
Ischemic heart disease	410-414
Malignant neoplasms	140-208, 230-234
Non-ischemic heart disease	420-429

SOURCE: *International Classification of Diseases, 9th Revision, Clinical Modification.*

Table 2

Mean number of planned and approved visits during the first 60 days of home health care and approved visits as a percent of planned visits, by type of visit

Type of visit	Mean planned visits	Mean approved visits	Approved visits as percent of planned visits
Total	24.76	15.95	64.4
Skilled nursing	13.44	8.88	66.1
Home health aide	6.44	3.77	58.5
Physical therapy	3.82	2.53	66.2
Occupational therapy	0.49	0.40	81.6
Speech therapy	0.35	0.19	54.3
Medical social work	0.21	0.17	81.0

NOTES: Excludes clients who died or received home health care from more than one provider during the first 60 days of care; n = 2,431 home health agency clients.

SOURCE: Data extracted from HCFA Forms 485 and 486; and Health Care Financing Administration: Medicare utilization data from the Bureau of Data Management and Strategy 40-percent Home Health Agency Bill Record File for a sample of clients beginning an episode of home health care in 1986.

recommended an average of 24.76 visits for each beneficiary, with the majority of services planned to be skilled nursing visits (13.44). According to the 40-percent Home Health Agency Bill Record File, the number of approved visits during the first 60 days for these clients was 15.95 visits. The approved visits thus represented approximately two-thirds of the planned visits (64.4 percent), with more variation among the skilled therapies that are used least frequently (occupational therapy and medical social work services had approximately an 80-percent ratio of approved-to-planned visits, and speech therapy had a 54-percent ratio of approved-to-planned visits). Overall, the pattern suggested in Table 2 is that the planned visits for the first 60 days are a consistent overestimate of visits actually billed and approved. This phenomenon of observing only two approved visits for every three planned during the first 60 days is relatively uniform for all types of services (range from 54 percent to 82 percent), suggesting that the discrepancy between planned and approved is not a function of a specific kind of service being more difficult to estimate at intake.

Given that the concordance between planned and approved is only at the 65-percent level and appears relatively uniform across the types of home health care services, it is plausible to consider whether the concordance levels are related to the total number of planned visits. Perhaps those with fewer planned visits have a higher concordance rate because of the possibility that the task of the intake care manager is simplified for those needing fewer services, and the concordance rate for those with a larger number of initial planned visits might be lower, because the task of the intake care manager is more difficult. Table 3 presents information with which to evaluate this hypothesis.

For clients with initial total planned visits between 1 and 50, we observe a relatively uniform increase in the number of approved visits—for every increase of 10 planned visits, there was a corresponding increase of approximately 5 approved visits. There were two anomalies to this general pattern. One was among those

Table 3

Mean number of total planned and total approved visits during the first 60 days of home health care and percent distribution of total approved visits, by number of approved visits

Number of planned visits	Number of HHA clients	Percent of HHA clients	Mean total approved visits	Total	1-10	11-20	21-30	31-40	41-50	50+
							Percent distribution			
Total	2,431	100.0	15.95	100.0	—	—	—	—	—	—
Less than 1	217	8.9	12.36	100.0	53.0	28.6	12.9	1.8	2.8	0.9
1-10	482	19.8	6.60	100.0	85.5	11.6	2.1	0.4	0.2	0.2
11-20	597	24.6	11.11	100.0	54.1	36.2	7.4	1.8	0.3	0.2
21-30	409	16.8	16.00	100.0	36.2	34.7	18.8	6.4	3.2	0.7
31-40	265	10.9	20.71	100.0	23.4	30.9	27.2	12.4	3.8	2.3
41-50	177	7.3	25.67	100.0	13.0	27.7	23.2	18.6	15.2	2.3
51 or more	284	11.7	34.13	100.0	11.3	16.9	21.8	16.9	12.7	20.4

NOTES: Excludes clients who died or received home health care from more than one provider during the first 60 days of care; n = 2,431 home health agency clients. HHA is home health agency.

SOURCE: Data extracted from HCFA Forms 485 and 486; and Health Care Financing Administration: Medicare utilization data from the Bureau of Data Management and Strategy 40-percent Home Health Agency Bill Record File for a sample of clients beginning an episode of home health care in 1986.

who had zero initial planned visits (8.9 percent of the clients, and they had a mean of 12.36 approved visits). It is plausible that those with zero planned visits comprise two subgroups: one group are those who, in fact, were initially planned to receive only durable medical equipment, and the other are those for whom the Form 486 was simply incomplete. The second anomaly occurs among those with more than 50 planned visits (11.7 percent of the clients, with a mean of 34.13 approved visits). They had an increase of approximately 10 (not 5) approved visits from the previous group, but bear in mind that their planned visits were 50 or more and not limited to between 50 and 60.

Table 3 also presents the percent distribution of total approved visits for each level of planned visits. For those with 1-10 planned visits, 85 percent had approved visits in the same range, and the remaining 15 percent had approved visits in excess of the planned visits. For those with 11-20 planned visits, more than one-half (54 percent) had 1-10 approved visits, but only 36 percent had approved visits in the same range (i.e., 11-20) as planned visits. For those with 21-30 planned visits, nearly three out of four (71 percent) had fewer approved visits than planned visits, compared with 10 percent who had more approved visits than planned visits. Among those with 31-40 planned visits, 81 percent had fewer total approved visits than planned, with only 6 percent receiving more visits than planned. Lastly, for those with 41-50 planned visits, we also observe that approximately 80 percent (82 percent) had fewer approved visits than planned visits, and only 2 percent had more visits than planned.

Overall, the pattern of total approved visits does not show systematic deviation of a function of total planned visits, with two exceptions. The first was those with no planned visits who may represent two subgroups as noted earlier—those planned to receive durable medical equipment only and those for whom the Form 486 was incomplete. The second exception was those with 1-10 planned visits; in fact, 85 percent of these did indeed receive 1-10 approved visits. The data therefore provide limited support for the hypothesis that the initial home health care manager might be more accurate for those who have simpler care plans, as evidenced by a

lower number of planned visits, compared with those with heavier care needs, as evidenced by a larger number of initial planned visits.

It is also plausible to consider two additional alternative hypotheses to explain the observed discrepancies between planned and approved visits. One is that certain types of visits might be more difficult for the HHA care manager to predict at intake. The second is that the difficulty that may be present in predicting certain types of service use at intake may also be compounded by the overall care needs of the client, as inferred by the total number of planned visits.

To address these issues, Table 4 presents the ratio of approved visits to planned visits for each type of visit, stratified by the number of planned visits. Those whose planned visits were few (between 1 and 10) received between 10 and 15 percent more services in total (113 percent), with a range between 93 percent and 126 percent for all specific types of services except medical social work, which was an outlier at 33 percent. In general, the total number of approved visits and the specific types of approved visits were approximately concordant with the planned visits for those who had a small number of planned visits. For those whose planned services were between 11 and 50, we see a relatively uniformly decreasing ratio of approved visits to planned visits (from 71 percent for those with 11-20 planned visits to 56 percent for those with 41-50 planned visits). For individuals with planned services between 11 and 50, the ratio of approved skilled nursing visits to planned visits was quite uniform (between 61 percent and 65 percent); and it was almost as uniform (62 percent to 66 percent) for physical therapy, with the exception of an outlier (84 percent) for those with 21-30 planned visits. Approved home aide visits for those who had between 30 and 50 total planned visits occurred at approximately one-half the planned rate (49 percent) and at 69 percent to 75 percent for those with 11 to 30 planned visits. The percent of approved visits for occupational therapy was quite variable relative to total planned visits, probably in large measure because of the small volume initially planned (Table 2). The ratio of approved speech therapy visits to planned visits was uniformly lower, at 20 percent

Table 4

Number of approved visits during the first 60 days of home health care as a percent of planned visits, by type of visit

Number of planned visits	Type of visit						
	Total	Skilled nursing	Health aide	Physical therapy	Occupational therapy	Speech therapy	Medical social work services
Less than 1	(1)	(1)	(1)	(1)	(1)	(1)	(1)
1-10	113.2	93.3	[2]126.0	93.3	[2]116.7	(1)	33.0
11-20	70.9	64.8	74.6	61.7	[2]286.1	[2]20.1	62.6
21-30	63.5	61.0	69.0	83.8	51.5	45.3	42.0
31-40	58.2	61.1	48.5	61.6	47.6	[2]37.7	64.1
41-50	55.7	62.4	48.7	65.9	[2]163.9	[2]55.3	[2]53.1
51 or more	50.3	51.0	51.7	53.1	53.0	45.4	59.2

[1]Division by zero planned visits not possible.
[2]Fewer than 15 cases in denominator of ratio; likely to be unstable estimate.

NOTES: Excludes clients who died or received home health care from more than one provider during the first 60 days of care; n = 2,431 home health agency clients.

SOURCE: Data extracted from HCFA Forms 485 and 486; Health Care Financing Administration: Medicare utilization data from the Bureau of Data Management and Strategy 40-percent Home Health Agency Bill Record File for a sample of clients beginning an episode of home health care in 1986.

to 55 percent for those with 11 to 50 planned visits. For those whose total planned visits exceeded 50, the ratio of approved to planned visits averaged approximately 45 to 60 percent across all types of visits. Overall, Table 3 suggests that the ratio of approved visits to planned visits is relatively consistent at between 90 and 125 percent (excepting one outlier) for those with few planned visits (i.e., between 1 and 10 total planned visits) but also relatively consistent (with a lower ratio and a few more outliers) among those with 11 to 50 or more planned visits (45 percent to 75 percent). Therefore, there seems to be no consistent trend to support the hypothesis that some types of visits are more difficult to plan at intake nor any trend to support the hypothesis that some specific services might be more difficult to predict, depending on the overall care needs of the client.

Another hypothesis to consider is whether characteristics of the client might be systematically related to the concordance or deviation between approved versus planned visits during the first 60 days. A series of one-way analyses of variance (ANOVAs) were undertaken to address this possibility (Table 5). ANOVAs were calculated for the deviation between approved versus planned visits in total and for the deviation within each of the six types of visits. For each of these seven deviations, 37 individual ANOVAs based on different client characteristics were calculated. The reader is cautioned, therefore, that 1 out of every 20 analyses would likely yield a type 1 error at a probability level of 0.05. That is, for every 20 statistically significant differences observed in the data, 1 would be in error; and there, in fact, was not a true difference in that instance. Thus, obtained statistical differences are expected to be misleading 1 in 20 times.

The following client characteristics were not statistically related to the deviation between total approved visits and total planned visits during the first 60 days: sex, age, number of medications, nutrition status, mobility restrictions, none of the 11 individual functional limitations, the total number of limitations, none of the 16 most common principal diagnoses, or

admission from either a nursing home or from the hospital as a medical patient. However, each admission to an HHA directly from the community or from the hospital as a surgery patient was significantly related to a discrepancy between total approved visits and total planned visits.

Inspecting the columns in Table 5, we observe that among the six types of specialized therapies provided by the HHAs, the deviation between approved and planned visits of only one (physical therapy) appeared to have been systematically associated with client characteristics, as evidenced by a pattern of 19 out of 37 client characteristics showing a statistically significant association with the deviation between approved and planned physical therapy visits. All the other specific kinds of visits showed only one to eight client characteristics associated with the deviation between approved and planned visits, suggesting that the client characteristics were not systematically related to the deviation for those specific kinds of services.

Inspecting the rows of Table 5, we observe that admission source seemed to be associated with particular difficulty for concordance in certain areas. Those admitted from a nursing home presented no statistical association with deviation between approved and planned visits for any of the six visit types or for total visits. Those admitted directly from the community, on the other hand, were statistically more likely than those admitted from any other site to have had a deviation between approved and planned visits in total, and for the two most common specific services (i.e., skilled nursing and home health aides). Furthermore, surgical hospital patients were also more likely than those admitted from any other source to have had a deviation between approved visits and planned visits in total, for skilled nursing visits in particular, and for physical therapy visits in particular.

In summary, then, a vast majority of client characteristics were not statistically significantly associated with deviation between approved visits and planned visits. There were several exceptions, however. One exception is that client characteristics appeared to

Table 5

Deviation between planned and approved visits during the first 60 days of home health care based on probability of one-way analysis of variance, by type of visit and characteristics of home health care beneficiaries

Characteristics	Total	Skilled nursing	Home health aide	Physical therapy	Occupational therapy	Speech therapy	Medical social services
Gender	.680	.269	.060	.819	.407	.127	.960
Age	.650	.391	.321	.946	.997	.116	.507
Medications (number)	.701	.116	.599	*<.001	.469	.284	.706
Admission source:							
Community	*.002	*.013	*.001	.493	.709	.117	.283
Hospital (medical)	.462	.751	*.025	*.035	.503	.761	.941
Hospital (surgical)	*<.001	*<.001	.179	*<.001	.265	.168	.235
Nursing home	.455	.405	.864	.970	.684	.621	.727
Nutrition status	.181	.276	.667	*<.001	.082	.573	.131
Mobility restrictions	.330	*.024	.136	*<.001	.626	.085	.634
Functional limitations:							
Endurance	.315	.362	*.041	.090	.563	.458	.053
Ambulation	.913	*.013	.205	*.003	.285	.560	.174
Vision	.336	.487	.693	*<.001	.398	.495	.369
Respiration	.491	.103	*.023	*<.001	.454	.336	.535
Hearing	.440	.516	.290	.535	.351	.614	.724
Mental	.914	.697	.432	.322	.868	*.036	.376
Bowel or bladder	.172	.124	.688	.094	.119	.333	.823
Speech	.084	.425	.584	.234	*.046	*<.001	.596
Paralysis	.098	.550	.432	*.032	.787	*<.001	.368
Contracture	.676	.286	.665	.320	.537	.705	.378
Amputation	.750	.492	.636	.656	.173	.706	.922
Sum of limitations	.585	.651	*.025	*.041	.778	*.015	.837
Principal diagnosis:							
Malignant neoplasms	.791	.296	.754	*.036	.507	.855	.207
Heart disease, other	.343	.473	*.002	*.049	.452	.411	.404
Cerebrovascular disease	.226	.268	.453	*.005	.194	*<.001	.234
Digestive system disease	.744	.169	.411	*.020	.567	.586	.821
Arthropathies	.986	*.016	.559	*<.001	.090	.594	.512
Ischemic heart disease	.313	.176	*.017	*.013	.580	.570	.752
Diabetes mellitus	.364	.060	*.018	*.002	.727	.903	.180
Chronic obstructive pulmonary disease	.860	.304	.959	.104	.731	.815	.500
Circulatory system disease	.125	*.048	.981	.634	.806	.646	*.023
Bone fractures	.512	.275	.083	.143	.140	.773	.563
Hip fractures	.332	*.011	.177	*<.001	.318	.542	.744
Central nervous system disease	.952	.566	.648	.923	.529	.975	.773
Hypertension	.488	.632	.915	.283	.689	.904	.419
Genitourinary system disease	.763	.714	.521	*.016	.693	.706	.438
Injuries and poisoning	.744	.577	.989	.705	.541	.731	.548
Chronic skin ulcer	.834	.980	.960	.742	.735	.747	.930

NOTES: *Denotes probabilities less than 0.05 level. Excludes clients who died or received home health care from more than one provider during the first 60 days of care; n = 2,431 home health agency clients.

SOURCE: Data for the statistical comparisons came from HCFA Forms 485 and 486; Health Care Financing Administration: Medicare utilization data from the Bureau of Data Management and Strategy 40-percent Home Health Agency Bill Record File for a sample of clients beginning an episode of home health care in 1986.

influence the intake care manager's ability to plan physical therapy services accurately. The discrepancy between approved and planned physical therapy visits was related to 19 of 37 patient characteristics. The second exception is that admission source was also differentially related to the discrepancy between approved and planned visits, with those admitted directly from the community or from hospital surgical wards presenting more difficulty to the intake care manager. This difficulty was manifested in greater deviation between approved and planned visits in total and for skilled nursing care in particular.

Summary

The concordance between approved visits and planned visits, as authorized by the Medicare HHA intake manager, is not high. In general, about two-thirds of the services initially planned are, in fact, subsequently provided and approved. This ratio of approximately two approved visits for every three planned is particularly consistent within all the high volume services (i.e., skilled nursing, home health aide, and physical therapy). There is more variation in those services that are planned less frequently (i.e., occupational therapy, speech therapy, and medical social work).

Four hypotheses concerning the discrepancy between approved and planned visits were examined. The first hypothesis was that concordance or discrepancy might be systematically related to whether the client was considered a light-care or heavy-care patient at intake, as evidenced by the amount of planned services. There appeared to be some support for this hypothesis in that 85 percent of those with 1-10 planned services had approved visits in the same range, suggesting that the discordance between approved visits and planned visits was differentially related to whether the client was a heavy-care or light-care patient.

The second hypothesis considered was whether certain types of visits might be more difficult for the HHA intake manager to predict. The data did not support this hypothesis. The ratios of approved to planned visits did not vary appreciably across the different types of care.

The third hypothesis considered was that some difficulty in predicting certain types of services at intake might be exacerbated by the degree of care the client needed, as indicated by the volume of the initial total planned visits. The ratio of approved to planned visits for the specific types of therapy were quite consistent among all clients, regardless of their amount of initial planned care, with the one exception that those whose total planned visits were quite few (between 1 and 10) had greater concordance between planned and approved visits. It was only among those who had total care plans of 11 or more visits that no systematic association was apparent. This reinforces, as might be expected, that it is easier to predict accurately the number of visits required for clients whose care needs are more limited in scope or short-term in nature.

The fourth hypothesis was that certain client characteristics might be systematically associated with discrepancies between planned and approved visits. The vast majority of the 37 patient characteristics examined did not exhibit any systematic associations with the concordance ratios. One exception was that an array (approximately one-half) of the client characteristics were significantly related to discrepancies in planned versus approved physical therapy visits. This may indicate that it is more difficult for nurses to predict the number of visits that will be provided by another practitioner. Another exception was that those clients coming directly from the community or coming from hospitals as surgical patients were more likely than clients coming from nursing homes or from hospitals as medical patients to have discrepancies between planned and approved visits. Possible explanations are that the recuperation period of post-surgical patients may be less predictable than that of post-hospital medical patients, and there may be less information available about the health status of patients entering home health care from the community, making their future visits more difficult to predict, than post-hospital patients with medical conditions.

Finally, a comment is in order concerning the fact that the approved visits rates do not include visits that were provided but for which Medicare payment was subsequently denied. Throughout this analysis, our implicit assumption has been that any difference between initially planned and subsequently approved visits represented a change in provider judgment concerning the amount of care required. We acknowledge that these differences could also include discrepancies resulting from the fiscal intermediaries' denials of payment for care provided and/or claimed, based on the Medicare coverage or medical necessity criteria. Rather than changes in clinical judgment, these portions of the differences would reflect the intake workers' failure to create a plan of care that conforms to Medicare program guidelines. Based on the data available, we cannot distinguish between these two components of discrepancy, but both are relevant when considering the potential use of providers' care plans at admission in setting reimbursement rates. However, it was not possible methodologically to construct a variable of "actual visits" and use it instead of approved visits. The only possible approximation of "actual visits" would be the provider's submitted visits, but the review and denial process could identify errors in submitted visits that in fact were not provided. Hence, our decision was to use approved visits.

Conclusion

It appears that the Forms 485 and 486 are only moderately successful in meeting this additional post-facto function they were put to in this analysis, namely a test of whether the care planner's initial authorization forms could be used to predict the actual level of approved visits during the first 60 days among survivors who had only one HHA provider. The data came from urban, nongovernmental Medicare-certified HHAs that had at least 3 years of prior experience. There is usually a high incidence of problems when information that was collected for one purpose is subsequently used for another purpose. In this context, the moderate degree of concordance between planned and approved visits is encouraging.

Acknowledgment

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