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Treatment of Dementia Among Community-Dwelling and Institutionalized Medicare Beneficiaries

Ann L. Gruber-Baldini, Ph.D.
Bruce Stuart, Ph.D.
Ilene Zuckerman, Pharm.D., Ph.D.
Linda Simoni-Wastila, R.Ph., Ph.D.
Ram Miller, M.D.C.M., M.S.

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Contents

Author affiliations:
Ann L. Gruber-Baldini, Ph.D.[1]
Bruce Stuart, Ph.D.[2]
Ilene Zuckerman, Pharm.D., Ph.D.[2]
Linda Simoni-Wastila, R.Ph., Ph.D.[2]
Ram Miller, M.D.C.M., M.S.[1]

[1] Division of Gerontology, Department of Epidemiology and Preventive Medicine, University of Maryland School of Medicine, Baltimore, MD.
[2] Peter Lamy Center on Drug Therapy and Aging, University of Maryland School of Pharmacy, Baltimore, MD.

Abstract

Objectives: To establish nationally representative estimates of the use of agents to treat Alzheimer's disease and related dementias (ADRD) and related behavioral symptoms among Medicare beneficiaries, and to describe medication use by residential status and other patient characteristics.

Design: Cross-sectional prevalence study.

Setting: Community-dwelling and various long-term care (LTC) settings.

Participants: 12,697 beneficiaries from the 2002 Medicare Current Beneficiary Survey (MCBS) of whom 11,593 were community dwelling and 1,104 resided in various LTC settings.

Measurements: ADRD was identified by ICD-9 codes in Medicare claims and self/proxy reports. Medication use was derived from self-reports (community) and extracts of facility medication administration records (LTC).

Results: In 2002, an estimated 3.4 million Medicare beneficiaries were diagnosed with ADRD (8.1%), of whom 58.9% resided in the community (prevalence rate=5.1%) and 41.1% resided in LTC facilities (prevalence rate=57.2%). Use of anti-dementia drugs was similar across settings, with 24.7% of dementia cases in the community and 26.3% of those in LTC receiving prescriptions for donepezil, galantamine, or rivistagmine. Use of haloperidol was comparable (and low) in both settings. Use of atypical antipsychotics, especially risperidone, olanzapine, and quetiapine was much higher in LTC residents (21.0%, 11.9%, and 7.1% respectively) than in the community (5.1%, 4.0%, and 2.3%).

Conclusion: The prevalence of ADRD in LTC settings is much larger than in the community, but there is little difference in the proportions receiving anti-dementia drugs across residential settings. However, LTC residents are more likely to be treated with atypical antipsychotics (risperidone, olanzapine, and quetiapine), presumably for behavioral symptoms.

Keywords: Dementia, Medications, Community, Long-term care, Prevalence.

Introduction

Alzheimer's disease and related dementias (ADRD) is a global term comprising Alzheimer's disease, vascular dementia, dementia with Lewy bodies, and mixed forms of dementia. [1] ADRD are prevalent, devastating, and costly diseases affecting U.S. elderly residing in both community and long-term care (LTC) settings, with four and a half million Americans are reported to have dementia. [2] Although 70% of persons with dementia reside in the community[3, 4], between 50% and 75% of residents in nursing homes have dementia. [5] Dementia is also a leading predictor of nursing home (NH) placement[6] and it is estimated that as many as 75% of all persons with dementia will eventually reside in the NH. [7]

Estimates of the prevalence of dementia vary widely, depending on diagnostic criteria[8], population of interest, and data source. Treatments for ADRD and related behavioral symptoms in dementia are numerous and constantly evolving. Cholinesterase inhibitors are currently approved for treating memory and other dementia-related cognitive problems and are approved for treatment in mild-moderate dementia. [9] In patients with moderate to severe dementia there is evidence donepezil, a cholinesterase inhibitor, and memantine, a N-methyl-D-aspartate (NMDA) inhibitor, are effective[9], and at least one clinical trial suggests that the combination of donepezil and memantine is more effective than donepezil alone. [10] In addition to cognitive impairments, behavioral symptoms (including agitation, aggression, and delusions) are observed in 60% to 98% of patients with dementia and are also a major focus of pharmacological treatment. [11, 12]

In a previous study, the authors[13] reviewed 81 recent randomized clinical trials of dementia drugs and behavioral agents published between January 2003 and December 2005. Only 12 were conducted in long-term care settings, all nursing homes. A small number of observational studies have examined dementia treatment in assisted living facilities. [14-16] However, there is little research documenting the prevalence of dementia treatments between residential and community settings, and none that we are aware of which are nationally representative.

The aim of this project was to provide nationally representative estimates of the prevalence of the use of anti-dementia agents and therapies for treating behavioral manifestations of ADRD and to describe differences in medication use by setting (community vs. LTC) and other characteristics of the sample (e.g., demographics).

Methods

Data

Data were derived from the Medicare Current Beneficiary Survey (MCBS) for 2002. The MCBS is a nationally representative survey of Medicare beneficiaries residing in the United States and its territories. The survey collects data on use and cost of all medical services used by beneficiaries plus a wealth of information on demographic characteristics, insurance, and health and functional status. This information is augmented with data from Medicare administrative files and paid claims for Part A and Part B services. The MCBS files also include survey

weights that can be used to produce nationally representative estimates. The MCBS survey uses a rotating panel design that follows each respondent for up to four years. Respondents are interviewed in their own residence. Beneficiaries identified as community-dwelling are interviewed in person (or by a proxy) 3 times a year. Information for beneficiaries identified as long-term care facility residents is obtained from facility records and staff interviews.

The 2002 MCBS surveyed 12,697 beneficiaries, of whom 11,593 were community dwelling and 1,104 resided in various LTC settings. Almost two-thirds (865) of the facility residents were in nursing homes, 27% (354) were in assisted living and related facilities, and the remainder (102) resided in long-term hospitals, mental health centers, and various other LTC settings. [17] When a subject was unable to give information due to physical or mental reasons, a proxy provided data. Proxies provided all information for subjects in LTC (per protocol) and for 36.7% of community-dwelling participants with ADRD all data came from proxies and an additional 15.0% had partial data from proxies.

Study Subjects

Dementia cases were defined by either self/proxy report of a diagnosis of dementia, or from ICD-9-CM codes identified in the Medicare claims files for each respondent. For residents in LTC settings, claims-based diagnoses of dementia were supplemented with medical record extracts including data from the Minimum Data Set (MDS). The Appendix table provides a summary of ICD-9-CM dementia codes used in the study. ADRD was considered present if any of these ICD codes were on any Medicare claim during the prior year (claims record up to 9 codes). Medicare claims included both Part A and B claims, and any diagnosis (not just primary) of ADRD was counted. Alzheimer's disease was defined using the 331 code. Vascular dementia was defined as ICD codes 290.4x. Other dementias comprised various types of senility in the 290 and 297 code ranges. Lewy Body disease/dementia, 331.82 was excluded from the list because that code was not in use in 2002. For nursing home residents, a MDS-COGS scale was used as an additional determinant of ADRD status, as well as to score severity of dementia into 3 categories: mild (1), moderate (2-4) and severe (5-10). Measures of cognition using the MDS-COGS correlate about 0.7 with the Mini-Mental State Examination. [18]

Measures

We characterize the study population with ADRD on various domains, including socio-demographic factors (age, gender, race, ethnicity, census region, metropolitan urban/rural status, and supplemental medical insurance), ADL functioning (dependence in bathing, dressing, eating, getting in and out of bed or chairs, walking, and using the toilet), presence of depression, mortality, inpatient days (hospitals, LTC facility, Medicare qualified SNF days), and, for nursing home residents only, severity of dementia and behavioral manifestations (including wandering, agitation, aggression, and resistance to care).

Medication measures included the cholinesterase inhibitors, donepezil, galantamine, and rivastigmine (the NMDA receptor inhibitor, memantine was not approved by the FDA until October 2003 and thus is not present in our 2002 data). Medications typically used for the treatment of behavioral symptoms of dementia included one typical antipsychotic (haloperidol) and six atypical antipsychotic agents (aripiprazole, clozapine olanzapine, quetiapine, risperidone and ziprasidone).

Medication use was derived from self-reports (community) and extracts of facility medication administration records (LTC). In the community, prescription fills are self-reported with a four-month recall (3 times a year). Respondents are asked to keep all medication containers which are reviewed by the interviewer during each in-home interview session. Respondents are also asked to keep insurance slips and receipts and are queried about medications mentioned in a previous round if there are not repeated in a current interview. For facility residents, medication prescriptions and administrations are extracted directly from the facility's monthly Medication Administration records (MAR).

Analyses

Unweighted and weighted frequencies (and standard errors) of dementia cases and treatments are cross-tabulated by setting (community-dwelling or LTC) and examined differences in method of dementia ascertainment (claims, self/proxy report), type of dementia (Alzheimer's, vascular dementia, other), and other subject characteristics (sociodemographic, etc.). The MCBS survey weights are used to project national estimates for each measure. SAS version 9 PROC SURVEY (FREQ or MEANS, depending on data) was used to correct the estimated standard errors for the complex sampling design of the MCBS.

Results

Prevalence of Dementia

Table 1 provides data on prevalence of ADRD among Medicare beneficiaries by setting in 2002. Approximately 3.4 million beneficiaries were identified using the three methods of case ascertainment. The overall prevalence of dementia within the community was 5.1% and was 57.2% in LTC facilities. Data from claims provided slightly higher estimates of dementia cases than self/proxy reports in the community and medical record extracts in LTC facilities, but each method misses between 19% and 41% of the total number of beneficiaries with the disease (based on the assumption that neither method of case ascertainment is subject to significant false positives). In the community, claims captured 67% of overall ADRD cases (458/686) and thus miss 23% and self/proxy reports miss 41% of cases. In LTC facilities claims miss 19% while medical record/MDS reports miss 27% of ADRD cases. MDS records did not provide additional information in the LTC setting. Correspondence between claims and reports was 96% in community (kappa=.39) and 75% in LTC (kappa=.47), suggesting moderate agreement between sources. [19] The most common type of dementia identified from claims data is "other" forms of dementia (mostly unspecified senile dementia codes), followed by vascular dementia, and Alzheimer's disease.

Characteristics of the Population

Table 2 presents descriptive characteristics of Medicare beneficiaries with ADRD in 2002 in community and LTC settings. The community-dwelling population with dementia is younger

with 29.3% of cases aged 85+ compared to 47.2% in LTC facilities. Women made up the majority of dementia cases in both settings (72.8% in LTC facilities versus 61.7% in community). Most dementia cases are white (83.4% in community and 89.7% in LTC facilities), and few are Hispanic (7.3% in community and 4.8% in LTC facilities). More beneficiaries with dementia reside in the south than in the other regions, and more than three quarters of all cases are in urban areas. In the community, 7.5% of those with dementia had no Medicare supplemental insurance compared with 10.4% in LTC facilities. Private insurance followed by combinations of coverage were the prevalent sources of Medicare supplements for community dwellers. In LTC facilities, Medicaid was the predominant source of supplemental medical coverage.

As would be expected, beneficiaries with dementia residing in the community had better ADL functioning, with 39.1% showing no ADL impairment. In LTC settings over half had limitations in all 6 ADL categories. Depression was also much higher in the nursing home setting (47.1% vs. 29.7% in the community), as were annual mortality rates (23.2% vs. 16.1%).

Medication Use

Use of medications to treat ADRD and behavioral manifestations of dementia are presented in Table 3. Despite difference in prevalence of dementia, the use of cholinesterase inhibitors was similar across the 2 settings, with 24.7% of dementia cases in the community and 26.3% of those in LTC receiving donepezil, galantamine, or rivistagmine. Donepezil was the most frequently utilized cholinesterase inhibitor, used by 19.7% of dementia patients in the community and 18.0% in LTC.

Among the agents used to treat behavioral symptoms associated with dementia, haloperidol use was low overall (less than 4%) but slightly higher in LTC facilities. Use of olanzapine, quetiapine, and risperidone was much higher in long-term care facilities (11.9%, 7.1%, 21.0% respectively) than in the community (4.0%, 2.3%, 5.1%). Ziprasidone had low use in both settings (<1%). Aripiprazole and clozapine were not used by anyone in the sample with ADRD.

Table 4 presents a breakdown of cholinesterase inhibitor use by residential status, method of disease ascertainment, dementia type, and selected characteristics of Medicare beneficiaries with dementia in 2002. In both residential settings, use of cholinesterase inhibitors was highest among dementia cases in the 75 to 84 age range, white, and having supplemental coverage other than Medicaid. Utilization rates were lowest among beneficiaries of other race (neither white nor black) and with Medicaid coverage. Among residents in LTC facilities, the percent taking cholinesterase inhibitors rises five-fold from 11.0% of those with mild dementia to 52.8% of those with severe dementia. Finally, it is interesting to note the differences in treatment rates according to method of dementia ascertainment and dementia type. Rates of cholinesterase inhibitor use in both community and LTC settings are much higher for beneficiaries with a diagnosis obtained from both Medicare claims and a self/proxy report (community) or medical chart extract (LTC) compared to those whose disease was diagnosed by either ascertainment method alone. Rates were also highest if Alzheimer's disease is recorded on a Medicare claim, with higher rates of use in the community (47.7% in community and 39.7% in LTC).

Discussion

This study used a large nationally representative sample of the Medicare population from the Medicare Current Beneficiary Survey to examine the treatment of ADRD by residential setting in 2002. Dementia was identified by claims, self/proxy report (community), and extractions from medical records including MDS records (for residents in long-term care facilities). We found that the prevalence of ADRD was 5.1% among community-dwelling beneficiaries and 57.2% among those in LTC settings. The much higher prevalence of dementia combined with higher levels of ADL impairment and depression among institutionalized beneficiaries with dementia was expected based on prior literature.[5] The overall prevalence of dementia found in other studies differs greatly by method of ascertainment and setting, such that estimates of dementia in those 65 and older in the community are typically 5%-13%[8, 20] and are 45%-70% in NH residents[5, 21, 22]

The reliance on self-/proxy-reported or claims diagnosis limits our sample in terms of prevalence in that only recognized dementia is used; however, it makes the data on medication use more valid in that prescription for medications should be higher among recognized dementia. Limiting our sample to only claims would restrict it to those who received medical attention over the course of the year and might have overestimated the percent that were treated. Diagnosis from claims alone have also been noted to undercount dementia[23, 24] and self-reported diagnosis for dementia may similarly not be reliable. There is a potential for errors in reporting of diagnosis with both forms of data, with the potential bias more likely in undercapturing cases, and so we combined the methods.

Despite the large difference in prevalence of dementia by setting, we found similar rates of use of cholinesterase inhibitors, with 24.7% of dementia cases in the community and 26.3% of those in LTC facilities taking donepezil, galantamine, or rivistagmine. This result was unexpected, as the primary indication for these medications is for the treatment of mild-to-moderate dementia. Although we had no direct measure of severity of dementia for the community-dwelling sample, it is reasonable to assume that the average severity of dementia cases was much higher in institutionalized settings. In other words, had practitioners followed the FDA labeling for prescribing cholinesterase inhibitors across settings, we would have expected lower utilization rates in LTC residents. Instead, we found that prescribing of these products in LTC settings was significantly higher among the most severe cases of the disease (MDS-COG scores of 5-10). The comparability of prescribing rates across the settings was also found despite the different method of measuring medication use, with institutional drug administration records being used in LTC and self-report in the community. It is possible that the self-report could undercount medication use, although the MCBS does attempt to verify medications through examining bottles of current medications in the home.

Donepezil was by far the most frequently used cholinesterase inhibitor in both settings. Galantamine and rivistagmine were rarely used in the community and only slightly more common in LTC settings. Although not indicated for moderate to severe dementia at the time of our study (2002), a study of nursing home residents with dementia by Feldman et al. [25] suggests that donepezil may still be effective in this more impaired group. Another study using data from 1992-1996 also suggests that donepezil is associated with decreased mortality in nursing homes.[26]

In addition, cholinesterase inhibitors are indicated for use only in Alzheimer's Disease. Rates of use were highest among those with a claim for Alzheimer's Disease. Type of dementia was not asked in the self-report and claims data may not reliable for subtyping of dementia. Less than 25% of our subjects had a claim for Alzheimer's disease and we had a larger amount with vascular dementia, which is not consistent with prevalence estimates by dementia type in the general literature. [8] Although cholinesterase inhibitors have been studied in non-Alzheimer's dementia and been found to be effective, the manufacturer of donepezil did report in March 2006 about a higher number of deaths (although not statistically significant) in the treatment arm of a study in vascular dementia. [27]

At the time of the study (2002), no drugs were labeled for use in moderate to severe forms of dementia (memantine was not approved until 2003 and donepezil received approval for this group October 2006). However, in the absence of treatments specifically approved for severe dementia during our study time frame, physicians may have been reluctant to remove patients from these medications even as their disease worsened, given the absence of other treatments for dementia, potential for decline if discontinued, and no clear guideline about when to discontinue. Pedone et al. [28] reported that between 1992 and 1996, use of donepezil was 30% among newly admitted nursing home residents with dementia and 19% among long-stay nursing home residents; after six months 44.8% of the new admission cohort and 59.5% of the long-stay residents remained on donepezil. This potential reluctance to remove medications from patients may partially explain some of the higher-than-expected use of cholinesterase inhibitors among our sample of institutionalized Medicare beneficiaries in 2002.

Rates of cholinesterase inhibitor use in both settings were much higher for beneficiaries with a diagnosis obtained from both Medicare claims and a self/proxy report (community) or medical chart extract (LTC) compared to those whose disease was diagnosed by either ascertainment method alone. This pattern might reflect differential certainty with respect to the diagnosis of dementia or it could mean that prescribers of cholinesterase inhibitors take added precautions to assure that the diagnosis of dementia is well established in claims. One might certainly expect lower rates of use in subjects with no claims for dementia (in that it might be a proxy for not seeing a physician) and it is possible that low rates in claims alone cases could include some misclassification error in diagnoses that we could not clarify.

Two other unexpected findings regarding use of cholinesterase inhibitors warrant mention here. First is the relatively low level of use of these agents among dually eligible Medicare/Medicaid beneficiaries compared to those with other sources of Medicare supplementation. In LTC settings, residents covered by Medicaid were approximately half as likely to be treated with a cholinesterase inhibitor as those with a private Medicare supplemental policy (19.2% versus 37.8%). This relationship also held in the community, albeit overall rates of drug use were lower (15.5% versus 29.4%). Whether these differences are due to payment policy or other factors is not addressed in this analysis, but clearly deserves attention in future research. The second factor is race. We found Medicare beneficiaries with dementia who are black or other race are significantly less likely than whites to be treated with cholinesterase inhibitors. The differences are evident in both community and LTC settings and—as in the case of payor type—may be due to other factors than simply race.

Our analysis of drugs typically used to treat behavioral manifestations of dementia found that treatment using both conventional agents like haloperidol and the newer atypical antipsychotics are rare among beneficiaries in the community. Haloperidol also is rarely prescribed to residents with dementia in LTC facilities. On the other hand, rates of use of atypical antipsychotics,

olanzapine, quetiapine, and particularly risperidone, are much higher among residents with dementia in long-term care settings. Because these utilization rates are not adjusted for potential confounding factors, we cannot conclude the drugs were prescribed specifically to control behavioral symptoms associated with dementia. However, a recent study by Briesacher et al. [29] using MCBS data for 2000 and 2001 found the most common indicator for antipsychotic use by Medicare beneficiaries in nursing homes was dementia with aggression. This reported relationship is consistent with our findings, but further research is necessary to be certain.

In summary, this large observational study of Medicare beneficiaries with dementia provides a descriptive benchmark of utilization patterns for antidementia drugs and behavioral agents as of 2002. Further research is necessary to isolate the determinants of use of these agents and to track changes in practice patterns since 2002. When more recent data become available it will be particularly important to replicate this work given that new drugs (specifically memantine) and other drug classes have entered the market and guidelines for treating dementia and its attendant behavioral symptoms continue to evolve.

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Author Contributions

Author Name: Ann L. Gruber-Baldini, Ph.D., Study concept and design, analysis and interpretation of data, preparation of manuscript.
Author Name: Bruce Stuart, Ph.D., Study concept and design, acquisition of data, analysis and interpretation of data, and preparation of manuscript.
Author Name: Ilene Zuckerman, Pharm. D., Ph.D. Study concept and design, acquisition of data, analysis and interpretation of data, and preparation of manuscript.
Author Name: Linda Simoni-Wastila, R.Ph., Ph.D. Study concept and design, acquisition of data, analysis and interpretation of data, and preparation of manuscript.
Author Name: Ram Miller, M.D.C.M., M.S., Interpretation of data, and preparation of manuscript.

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Tables

Table 1: Prevalence of dementia among Medicare beneficiaries in 2002 by residential setting, method of dementia ascertainment, and type of dementia (unweighted and weighted estimates).

	Community				Long-term Care Facilities			
	unweighted n	weighted n	%	SE	unweighted n	weighted n	%	SE
Total MCBS sample	11,593	39,364,450			1,104	2,443,941		
Any dementia	686	2,001,780	5.1	(0.20)	616	1,397,862	57.2	(1.69)
Method of dementia ascertainment								
claims	458	1,322,265	3.4	(0.17)	499	1,137,918	46.6	(1.74)
MDS[a]	N/A	N/A	N/A		338	746,037	44.5	(1.69)
self/proxy report	405	1,194,958	3.0	(0.14)	451	1,015,640	41.6	(1.78)
claims alone	281	806,822	2.0	(0.13)	165	382,222	15.6	(1.13)
self/proxy report alone	228	679,515	1.7	(0.12)	117	259,944	10.6	(1.00)
Both claims and report	177	515,443	1.3	(0.10)	334	755,696	30.9	(1.69)
Type of dementia[b]								
Alzheimer's disease	168	476,134	1.2	(0.10)	241	548,393	22.4	(1.41)
Vascular dementia	233	691,721	1.8	(0.12)	282	653,736	26.7	(1.40)
Other	278	794,353	2.0	(0.13)	333	760,241	31.1	(1.56)

[a] Among those with MDS records,
[b] Among those with diagnosis from claims, subjects could have multiple types of dementia diagnosis,
N/A Not Applicable (MDS is not available in community)

Table 2: Characteristics of Medicare beneficiaries with dementia in MCBS 2002 by residential setting (weighted to be nationally representative).

		Community			LTC Facilities		
		n	% mean	(SE)	n	% mean	(SE)
Total		2,001,780			1,397,862		
Demographics							
Age							
	<65	110,541	5.5	(1.20)	55,442	4.0	(0.89)
	65-74	397,523	19.9	(1.62)	155,489	11.1	(1.52)
	75-84	906,400	45.3	(1.95)	526,973	37.7	(1.75)
	85+	587,316	29.3	(1.55)	659,958	47.2	(1.92)
Gender							
	Male	767,399	38.3	(1.67)	380,172	27.2	(1.91)
	Female	1,234,381	61.7	(1.67)	1,017,690	72.8	(1.91)
Race							
	White	1,668,770	83.4	(1.48)	1,254,197	89.7	(1.27)
	Black	214,117	10.7	(1.25)	107,074	7.7	(1.06)
	Other	118,893	5.9	(0.94)	36,591	2.6	(0.67)
Ethnicity							
	Hispanic	145,403	7.3	(0.95)	64,669	4.8	(0.87)
	Non-Hispanic	1,856,377	92.7	(0.95)	1,330,192	95.2	(0.87)

(continued)

Table 2: Characteristics of Medicare beneficiaries with dementia in MCBS 2002 by residential setting (weighted to be nationally representative) (continued).

		Community			LTC Facilities		
		n	% /mean	(SE)	n	% /mean	(SE)
Region							
	Northeast	412,164	20.6	(1.85)	283,590	20.3	(2.05)
	South	731,430	36.5	(2.03)	480,566	34.4	(2.43)
	Midwest	422,815	21.1	(1.68)	415,755	29.7	(2.42)
	West	435,371	21.7	(1.79)	217,952	15.6	(1.77)
SMSA							
	MSA, urban	1,574,943	78.7	(1.75)	1,070,140	76.6	(2.18)
	Non-MSA	426,837	21.3	(1.75)	327,722	23.4	(2.18)
Supplemental Medical Insurance (exclusive categories)							
Private		912,259	45.6	(2.31)	293,494	21.0	(1.91)
HMO		208,043	10.4	(1.38)	44,699	3.2	(0.80)
Medicaid		310,727	15.5	(1.73)	664,265	47.5	(2.14)
Other Public		27,190	1.4	(0.45)	0	0	(0)
Combinations of coverage		394,031	19.7	(1.61)	249,791	17.9	(1.85)
Medicare only		149,529	7.5	(1.26)	145,612	10.4	(1.24)

(continued)

Table 2: Characteristics of Medicare beneficiaries with dementia in MCBS 2002 by residential setting (weighted to be nationally representative) (continued).

		Community			LTC Facilities		
		n	% /mean	(SE)	n	% /mean	(SE)
Severity of Dementia (MDS-COGS)[a]							
Mild (1)		N/A	N/A		179,477	15.9	(1.68)
Moderate (2-4)		N/A	N/A		356,701	31.7	(2.26)
Severe (5-10)		N/A	N/A		590,399	52.4	(2.34)
ADL Functioning							
Independent Functioning	0	782,588	39.1	(2.02)	74,442	5.3	(0.94)
	1	288,150	14.4	(1.29)	78,043	5.6	(1.04)
	2	220,337	11.0	(1.27)	81,065	5.8	(1.00)
	3	167,076	8.3	(1.16)	110,254	7.9	(1.21)
	4	156,192	7.8	(0.93)	118,379	8.5	(1.20)
	5	175,113	8.7	(1.24)	227,631	16.3	(1.78)
Totally Dependent Functioning	6						
		212,325	10.6	(1.13)	708,047	50.7	(2.35)
Behavioral Symptoms[a]		N/A	N/A		405,940	36.1	(2.29)
Depression		594,641	29.7	(1.88)	658,575	47.1	(2.45)
Mortality		322,295	16.1	(1.47)	324,732	23.2	(1.71)
Days in:							
Inpatient hospital			6.2	(0.58)		5.4	(0.50)
LTC Facility			6.3	(1.14)		288.7	(4.54)
Medicare qualified SNF stay			5.0	(0.62)		14.8	(1.62)
Community-days			328.3	(3.23)		25.6	(2.67)
Total days			339.5	(2.75)		329.1	(3.49)

[a]Data from those with available MDS records in the LTC facility

Table 3: Prevalence of dementia treatments for Medicare beneficiaries with dementia by residential setting in 2002 MCBS (weighted to be nationally representative).

	Community			LTC Facility		
	n	%	(SE)	n	%	(SE)
Total	2,001,780			1,397,862		
Cholinesterase Inhibitors						
Donepezil	393,566	19.7	(1.56)	251,854	18.0	(1.67)
Galantamine	30,991	1.5	(0.45)	58,691	4.2	(0.74)
Rivastigmine	84,040	4.2	(0.74)	70,301	5.0	(0.96)
Any cholinesterase inhibitor	494,763	24.7	(1.72)	367,376	26.3	(1.90)
Typical antipsychotics						
Haloperidol	46,543	2.3	(0.58)	55,251	4.0	(0.84)
Quetiapine	46,813	2.3	(0.65)	99,926	7.1	(1.03)
Ziprasidone	3,527	0.2	(0.13)	5,862	0.4	(0.27)
Atypical antipsychotics						
Olanzapine	80,437	4.0	(0.84)	166,537	11.9	(1.34)
Risperidone	101,446	5.1	(0.91)	293,395	21.0	(1.63)

Table 4: Use of Cholinesterase Inhibitors by Medicare beneficiaries with dementia by residential setting, method of dementia ascertainment, and selected beneficiary characteristics in 2002 (weighted to be nationally representative).

	% Taking any Cholinesterase Inhibitor[a]					
	Community			LTC Facility		
	n	%	(SE)	n	%	(SE)
Total	494,763	24.7	(1.72)	367,376	26.3	(1.90)
Method of Dementia Ascertainment						
Claims alone	153,060	19.0	(2.51)	79,171	20.7	(4.22)
Self/proxy report alone	107,875	15.9	(2.21)	51,215	19.7	(4.22)
Claims plus report	233,828	45.4	(4.14)	236,990	31.4	(2.64)
Dementia Type [c]						
Alzheimer's Disease	226,896	47.7	(4.00)	217,769	39.7	(3.38)
Vascular Dementia	171,235	24.8	(2.74)	203,906	31.2	(2.83)
Other	222,395	28.0	(28.4)	225,770	29.7	(2.77)
Demographics						
Age						
<65	3,264	3.0	(2.94) [b]	2,356	4.2	(4.19) [b]
65-74	91,225	22.9	(4.07)	40,735	26.2	(6.48)
75-84	266,133	29.4	(2.58)	196,355	37.3	(3.50)
85+	134,142	22.8	(2.56)	127,929	19.4	(2.24)

(continued)

Table 4: Use of Cholinesterase Inhibitors by Medicare beneficiaries with dementia by residential setting, method of dementia ascertainment, and selected beneficiary characteristics in 2002 (weighted to be nationally representative) (continued).

	% Taking any Cholinesterase Inhibitor[a]					
	Community			LTC Facility		
	n	%	(SE)	n	%	(SE)
Gender						
Male	175,539	22.9	(2.86)	100,367	26.4	(3.58)
Female	319,224	25.9	(2.32)	267,008	26.2	(2.28)
Race						
White	435,472	26.1	(1.95)	343,375	27.4	(2.02)
Black	41,669	19.5	(4.25)	22,061	20.6	(5.37)
Other	17,623	14.8	(5.25)	1,939	5.3	(5.19)[b]
Ethnicity						
Hispanic	42,875	29.5	(5.67)	12,506	18.5	(7.21)[b]
Non-hispanic	451,888	24.3	(1.81)	354,870	26.7	(1.96)
Region						
Northeast	91,148	22.1	(3.25)	75,383	26.6	(3.29)
South	182,731	25.0	(2.96)	123,988	25.8	(3.38)
Midwest	96,136	22.7	(3.82)	122,010	29.3	(4.01)
West	124,749	28.7	(3.61)	45,995	21.1	(4.18)

(continued)

Table 4: Use of Cholinesterase Inhibitors by Medicare beneficiaries with dementia by residential setting, method of dementia ascertainment, and selected beneficiary characteristics in 2002 (weighted to be nationally representative) (continued).

	% Taking any Cholinesterase Inhibitor[a]					
	Community			LTC Facility		
	n	%	(SE)	n	%	(SE)
SMSA						
MSA, urban	418,753	26.6	(1.94)	276,745	25.9	(2.17)
Non-MSA	76,010	17.8	(3.31)	90,631	27.7	(4.46)
Supplemental insurance (exclusive categories)						
Private	268,611	29.4	(2.88)	110,849	37.8	(4.59)
HMO	47,175	22.7	(5.18)	19,926	44.6	(11.22)
Medicaid	48,026	15.5	(3.61)	127,855	19.2	(2.54)
Other Public	6,644	24.4	(15.00)[b]	0		[b]
Combinations	104,113	26.4	(3.79)	69,408	27.8	(4.30)
Medicare only	20,194	13.5	(5.32)	39,338	27.0	(5.83)
Mortality	35,796	11.1	(2.91)	43,667	13.4	(3.07)
Severity of dementia (MDS-COGS scores)						
Mild (1)	NA	NA	NA	29,980	11.0	(2.96)
Moderate (2-4)	NA	NA	NA	15,425	36.2	(4.49)
Severe (5-10)	NA	NA	NA	20,104	52.8	(5.12)

[a]Computed for those with either a self/proxy report or a claims-based diagnosis of dementia
[b] RSE =>0.30
[c] Dementia Type is only available if diagnosis is from claims, subjects could have multiple types of dementia diagnosis

Appendix: Dementia ICD-9-CM Codes[a]

Diagnosis	ICD-9-CM Codes
Senile dementia, uncomplicated	290
Presenile dementia	290.1
Presenile dementia, uncomplicated	290.1
Presenile dementia, w/delirium	290.11
Presenile dementia, w/delusional features	290.12
Presenile dementia, w/depressive features	290.13
Senile dementia, w/delusional features	290.2
Senile dementia, w/depressive features	290.21
Senile dementia, w/delirium	290.3
Arteriosclerotic dementia, uncomplicated	290.4
Arteriosclerotic dementia, w/delirium	290.41
Arteriosclerotic dementia, w/delusional features	290.42
Arteriosclerotic dementia, w/depressive features	290.43
Degenerative dementia	290.9
Amnestic syndrome	294
Dementia in conditions classified elsewhere	294.1
Other specified organic brain syndromes (chronic)	294.8
Unspecified organic brain syndromes (chronic)	294.9
Alzheimer's disease	331

Pick's disease	331.1
Senile degeneration of the brain	331.2
Cerebral degeneration in dx classified elsewhere	331.7
Lewy Body disease[b]	331.82
Cerebral degeneration, other	331.89
Cerebral degeneration, unspecified	331.9
Senility without mention of psychosis	797

[a] From: Martin BC, Ricci JF, Kotzan JA, Lang K, Menzin J. The net cost of Alzheimer disease and related dementia: a population-based study of Georgia Medicaid recipients. Alzheimer Dis Assoc Disord. 2000 Jul-Sep;14(3):151-9; Menzin J, Lang K, Friedman M, Neumann P, Cummings JL. The economic cost of Alzheimer's disease and related dementias to the California Medicaid program ("Medi-Cal") in 1995. Am J Geriatr Psychiatry. 1999 Fall;7(4):300-8.; and Taylor DH Jr, Fillenbaum GG, Ezell ME. The accuracy of medicare claims data in identifying Alzheimer's disease.J Clin Epidemiol. 2002 Sep;55(9):929-37.

[b] Lewy Body disease was not coded in 2002 and thus does not appear in our data.