

DISCREPANCIES IN TOTAL AND OUT-OF-POCKET PRESCRIPTION
COSTS BETWEEN WORKING-AGE AND ELDERLY
MEDICARE BENEFICIARIES

By

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Abstract

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Objective. To analyze differences in total and out-of-pocket prescription drug costs and use between working-age and elderly Medicare beneficiaries and to determine the key factors associated with prescription costs and utilizations levels among Medicare recipients.

Methods. This secondary data analysis uses a national sample of more than 11,000 respondents to the 2005 Medicare Current Beneficiary Survey. Categorical analyses of total prescription costs, based on the Medicare Part D standard benefit, help highlight potential differences in coverage. Multivariate regression analyses examine how demographic, insurance, and health factors influence total and out-of pocket prescription costs and rates of prescription medication utilization.

Results. Working-age beneficiaries report average total prescription costs of \$3,206 vs. \$2,048 for elderly beneficiaries, along with higher prescription utilization levels (43.27 annual prescribed medicine events vs. 30.51). Projecting total prescription

costs onto the 2006 Medicare Part D standard benefit, nearly 47% of working-age beneficiaries report total costs that exceed the lower threshold for the “doughnut hole” of \$2,250, compared the less than 34% of the elderly. Furthermore, more than 21% of the disabled beneficiaries have total prescription drug costs in excess of the \$5,100 catastrophic coverage level, versus less than 9% of beneficiaries aged 65 or older.

After controlling for gender, race, ethnicity, income, and insurance type, working-age beneficiaries still report nearly six additional prescribed medicine events (PMEs) per year. When controlling for these factors, age is not a significant variable when determining total and out-of-pocket costs per prescription. Factors with strong associations with cost per PME include income level, insurance type, and race.

Conclusions. In the year preceding Medicare Part D implementation, working-age beneficiaries report greater total prescription cost levels, due in large part to increased prescription drug utilization. Given the health and demographic differences between working-age and elderly beneficiaries, along with the impact of prescription drug insurance type on cost and use, it is important to monitor changes in prescription cost and utilization following the implementation of Medicare Part D.

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CHAPTER ONE

INTRODUCTION

This section provides preliminary information on the disabled population receiving Medicare, along with describing the importance for focusing on this group individually rather than folding them into general Medicare research. The second half of this section provides a summary of the current knowledge concerning the total and out-of-pocket prescription costs and use for disabled Medicare beneficiaries.

Introduction

According to the 2000 U.S. Census, there are over 33 million individuals between 16 and 64 who have disabilities (Williams, Dulio, Claypool, Perry & Cooper, 2004). Based on Social Security Disability Insurance (SSDI), adults under the age of 65 can enter the Medicare program through receiving SSDI benefits for 24 months, after being declared as unable to pursue substantial gainful activity for a 12-month period due to a physical or mental disability (Social Security Administration, 2008).

In 2007, Medicare covered 44 million Americans, with nearly seven million beneficiaries under the age of 65. A majority of these beneficiaries entered the program due to SSDI benefits based on permanent disability (Kaiser Family Foundation, 2007; Williams et al., 2004). Other working-age beneficiaries may also enter the Medicare program as: 1) disabled spouses, widows or widowers of current or deceased Medicare beneficiaries; 2) dependent, disabled children of current or deceased Medicare

beneficiaries, who have had severe or permanent disabilities since childhood; or 3) individuals with end-stage renal disease (Williams et al., 2004).

Though often overlooked in policy considerations, the working-age Medicare population has grown from six million beneficiaries in 2002 and is increasing in size at a faster rate than the elderly population covered by Medicare (Center for Medicare Education, 2003; Foote and Hogan, 2001). From 1995 to 1999, the disabled population under Medicare grew by 18.6% while the elderly population increased only by 2.4% (Foote and Hogan, 2001).

The differing demographics of the working-age beneficiaries add to the need for separate consideration from the general Medicare population. The working-age beneficiaries are more likely to be male, have lower incomes, to have four or more comorbidities, and at least one functional limitation (Bambauer, Safran, Ross-Degnan, Zhang, Adams, Gurwitz, et al., 2007). The limit of functional limitations is an important element in determining satisfaction of health care. Overall, Medicare beneficiaries with multiple activities of daily living (ADL) are more likely to express dissatisfaction with out-of-pocket costs and overall quality of care than beneficiaries with no limitations. Medicare beneficiaries with multiple ADL limitations were also less likely to report being in excellent or very good health (Jha, Patrick, MacLehose, Doctor & Chan, 2002). As a result of lower incomes and poorer health as a group, the working-age Medicare beneficiaries are vulnerable to both changes in health insurance and the rising costs of health care. Based on estimates of the 1999 Medicare Trustees Report, total out-of-pocket spending on health care for disabled beneficiaries aged 45-64 will increase from 29.1% of an individual's annual income to 41.1% in 2025 (The Urban Institute, 2001).

Looking into out-of-pocket costs, the increase of an individual's prescription drug expenses was the second largest contributor to rising total non-premium, out-of-pocket expense to Medicare beneficiaries between 1997 and 2003 (Neuman, Cubanski, Desmond & Rice, 2007). This will add to an existing imbalance, as disabled beneficiaries exhibited higher total per capita drug expenditures than elderly beneficiaries (Poisal, Murray, Chulis, & Cooper, 1999). Based on estimates from the 1998-2000 Medicare Current Beneficiary Surveys, disabled beneficiaries would comprise only 7% of the potential Medicare Part D enrollees, but the group would account for 16.6% of catastrophic spenders (Stuart, Briesacher, Shea, Cooper, Baysac & Limcangco, 2005).

Study purpose and significance

The key purpose of this research study is to analyze the differences in total and out-of-pocket prescription drug costs and use between working-age and elderly Medicare beneficiaries. Despite less emphasis placed on disabled Medicare beneficiaries, it is important to determine not just the access to care for this vulnerable population, but also the associated costs of receiving care. With Medicare Part D targeting increasing the access to prescription drug insurance, it is crucial to determine the ability of this population to take advantage of this change in access. Compared to elderly beneficiaries, the disabled population is more likely to experience cost-based prescription non-adherence, which points to the need to consider the impact of the out-of-pocket expenditures of care.

This study uses the 2004 Medicare Current Beneficiary Survey (MCBS) Cost and Use data files to update the knowledge base on the levels of prescription drug costs for

Medicare beneficiaries prior to the implementation of Medicare Part D. This study provides two key advances to the existing base of research. First, the main focus for policy and research on prescription costs has been with the elderly populations, due to their size and overall utilization. However, based on financial and health vulnerabilities, it is important to consider the impact of the changing health care system on the ability of disabled individuals to receive and afford proper medical care. Second, with the implementation of Medicare Part D in 2006, it is crucial to have an updated and relevant baseline, in order to draw future conclusions on the associated changes in cost and access based on the program. Due to the rapidly changing nature of health care and, more specifically, prescription drug use, cost estimates from ten years prior may not accurately gauge the differences attributed to recent policy programs. This study will provide these two advances through the research question: Is there a discrepancy in prescription drug costs between working-age and older Medicare beneficiaries in the time period before Medicare-D implementation, based on the types of supplemental prescription coverage used?

CHAPTER TWO

LITERATURE REVIEW

This chapter first describes the methods used for the literature search, as well as the inclusion and exclusion criteria for selecting relevant articles. The chapter then discusses key findings from the existing literature on prescription drug cost discrepancies between older and younger Medicare beneficiaries. The chapter concludes with the study's unique contribution to the current state of knowledge.

Literature Review Methodology

Using PubMed, Ovid, and CINAHL online databases, a literature search was performed using keyword combinations of “MCBS”, Medicare, “young beneficiaries”, “disabled beneficiaries”, “nonelderly beneficiaries”, “working age beneficiaries”, prescription, costs, expenditures, and “out-of-pocket”. The review focused on peer-reviewed English language articles written between 1998 and 2008, in order to focus on the most recent cost information available. The primary search yielded 48 possible articles, based on the keywords listed above.

Upon reviewing the abstracts available, articles that analyzed prescription costs for disabled Medicare beneficiaries were included. Research articles, which focus on groups with specific diseases or conditions, narrow classes of prescription use, or specific age classes within the elderly, were excluded from the final set of articles. Current literature estimating prescription costs post-Medicare D was also eliminated. After reviewing the initial list with the inclusion and exclusion criteria listed above, six articles

referenced prescription drug costs or out-of-pocket costs for the working-age Medicare beneficiaries. Three of the articles included information on the out-of-pocket prescription costs with disabled beneficiaries, with three additional articles either focusing on overall out-of-pocket expenditures or prescription costs for Medicare beneficiaries as a whole.

Literature Review Findings

Riley, Lubitz & Zhang (2003) break down the total costs of overall health care differences between aged and disabled Medicare beneficiaries, with focus on disability category, insurance, and type of medical costs. Including MCBS data from 1995 to 1999, disabled Medicare beneficiaries were more likely to be eligible for Medicaid (41.2% versus 13.3%), had greater expenditures for overall medical care (\$12,961 versus \$10,209) and total prescription drug care (\$1,228 versus \$792), yet had lower overall out-of-pocket expenditures as a percent of total health costs (13.5% versus 20.3%). Looking specifically at prescription drug costs, eight of the ten categories of disabled beneficiaries had greater annual total costs compared to aged beneficiaries (\$792), with the categorical annual totals ranging from \$512 for disability due to mental retardation to \$2,077 for respiratory disease disabilities. Each disability category paid lower percentages out-of-pocket for prescriptions (range of 22.9% to 37.0%) compared to elderly beneficiaries (45.9%), due in part to a greater percentage paid by Medicaid (27.7% of total prescription costs versus 7.8%).

Another study (Briesacher, Stuart, Doshi, Kamal-Bahl, & Shea, 2002) analyzes the demographics of the disabled population under Medicare and compares rough prescription cost and use against the elderly beneficiaries. Contrasted with elderly

Medicare recipients, disabled beneficiaries were more likely to report fair or poor health (59% versus 23%), more likely to have at least one ADL limitation (44% versus 26%), more likely to be under the federal poverty line (45% versus 20%), and as likely to report having at least three chronic conditions. Disabled beneficiaries also reported higher prescription use (34 annual prescriptions filled versus 25) and higher mean total prescription expenditures (\$1,284 versus \$841).

The Briesacher study also describes the differences in prescription drug data based on insurance coverage and type. Nineteen percent of disabled Medicare recipients with full-year drug coverage spent at least 5% of their annual income on prescription drugs. This proportion jumps to 36% of those with partial-year coverage and 44% of recipients with no drug coverage. Disabled beneficiaries also showed a greater decrease in the number of prescriptions filled due to coverage. The difference between full-year coverage and no coverage, with respect to mean annual prescriptions filled, was 13.2 prescriptions for disabled recipients versus 5.2 prescriptions for elderly beneficiaries. Out-of-pocket drug spending also varied based on insurance source for prescription coverage. Beneficiaries with Medicaid paid \$199 annually compared to those with no coverage (\$499), Medigap (\$601), Medicare+Choice (\$464) or employer-based plans (\$375).

A 2001 study by Foote and Hogan describe the association between overall health care costs and disability type for Medicare recipients under 65, according to the 1994-1996 MCBS cost and use data. Within the general disabled Medicare population, 37% qualified due to mental retardation, severe mental illness or dementia and account for 45% of total Medicare costs for the disabled subgroup. Additionally, inpatient treatment

for mental health crises disproportionately contributed to overall health costs. Inpatient treatment for psychoses represented one third of the total inpatient costs for beneficiaries with severe mental illness and those with mental retardation.

The average total health costs of Medicare recipients in the dementia category were more than twice the mean total costs of disabled beneficiaries (\$24,947 vs. \$10,538). On the other hand, 42% of disabled beneficiaries reported no mental disorders and fewer than 2 ADL limitations. This group reported back and joint problems and cardiovascular problems as reasons for disability and claimed total health costs 50% lower (\$5,144) than mean total expenses for the disabled under age 65. This disparity shows the great variation in total health expenditures based on disability type and severity.

Out-of-pocket costs are shown to vary based on Medicaid qualification. Despite poor health and high expenditures, just 43% of beneficiaries were eligible for Medicaid. Additionally, only 31% of beneficiaries with 2 or more ADL limitations, and without mental disorders, qualified for Medicaid. This dually-eligible status was important with out-of-pocket costs for both general health care and prescription drugs. Beneficiaries with dual-eligibility had total out-of-pocket costs of \$523 compared to \$1,361 for those who did not qualify for Medicaid. Although total outpatient drug costs were nearly equal (\$808 versus \$862), dually-eligible individuals had much lower out-of-pocket prescription expenses (\$148 versus \$413).

Neuman et al. (2007) have more recent information concerning the differences in total out-of-pocket expenditures for general health care between elderly and disabled populations. Using MCBS information from 1997-2003, the study measured all personal

spending on health care, including insurance premiums. Disabled recipients of Medicare showed the lowest median out-of-pocket spending when compared to three elderly age groups (65-74, 75-84, and 85 and older). Mean out-of-pocket spending was comparable to elderly beneficiaries aged 65-74 (\$3,192 versus \$3,000), but still less than 75-84 and 85+ categories (\$4,125 and \$6,286, respectively). This difference is lessened when income comparisons are made among the four groups. Disabled recipients had the lowest mean income at \$12,950, compared to the 65-74, 75-84, and 85+ categories (\$19,986, \$18,622, and \$17,719 respectively). Disabled beneficiaries had lower median values for the percentage of income spent on out-of-pocket (12.0% versus 13.8%, 17.8% and 22.2%). However, among 90th percentile out-of-pocket spenders, disabled beneficiaries experienced the greatest percentage increase compared to 1997 values (22.3% increase versus 9.6%, 9.3% and -8.3%). This vulnerability to higher costs is increased with respect to prescription drug out-of-pocket expenses, which increased 64% from 1997 to 2003 for the general Medicare population.

Davis, Poisal, Chulis, Zarabozo and Cooper (1999) compare the prescription drug use and costs between Medicare recipients with and without prescription drug coverage. Eighty-nine percent of Medicare recipients with drug coverage reported prescription drug use, compared to 81% of those with no drug coverage. The average number of prescriptions per person also drops when removing drug coverage, from 20.3 to 15.3 prescriptions per year. The difference is greatest among beneficiaries with supplemental Medicaid coverage, where the percent reporting prescription use falls from 91%, among those with drug coverage, to 56% for those without coverage. In this group, the average number of prescriptions falls from 27.0 prescriptions among those with coverage to 12.9

annual prescriptions for recipients without drug coverage. This points to a potential problem for disabled beneficiaries, who were shown in earlier studies to be more likely to have Medicaid coverage. The presence of prescription drug coverage also lowered total out-of-pocket expenditures from \$432 for Medicare beneficiaries to \$232.

A 2000 study by Poisal and Chulis also examine the changes in prescription use and cost based on drug coverage. The study confirmed information presented by Davis et al. concerning the decrease in mean prescriptions and the increase in out-of-pocket drug expenses due to lack of coverage. Poisal and Chulis also dissected prescription use and total mean spending based on age, using the 1996 MCBS. Disabled beneficiaries aged 44 and under and 45-64 years old exhibited the greatest number of annual prescriptions for beneficiaries with drug coverage, along with the greatest decrease in prescription use due to lack of coverage. Disabled beneficiaries with drug coverage had the highest mean spending on prescription drugs, but also had the greatest discrepancies between spending for those with and without drug coverage of any age groups.

Summary and Gaps Identified

The existing information on the prescription cost and use for disabled Medicare beneficiaries provides key information concerning previous levels within this population group. However, the most recent information specifically concerning the differences in prescription costs between disabled and elderly beneficiaries came from Medicare data available five years ago. Despite having some summary data from 2003, it is important to establish a recent baseline for cost and use levels before being able to analyze the impact of Medicare Part D. This would allow for more accurate population comparisons

and policy conclusions with data gathered post-implementation. The 2005 MCBS Cost and Use data is the key source of data to analyze the research question for this study: Is there a discrepancy in prescription drug costs between working-age and older Medicare beneficiaries in the time period before Medicare-D implementation, based on the types of supplemental prescription coverage used?

This research study has one central hypothesis and three sub-hypotheses. First, it is hypothesized that Medicare beneficiaries between the ages of 18 and 64 have higher total prescription drug costs than beneficiaries over the age of 65. Based on more detailed analysis, it is also hypothesized that:

- 1) Younger Medicare beneficiaries will have higher out-of-pocket prescription drug costs than Medicare beneficiaries over 65.
- 2) Younger Medicare beneficiaries will have greater annual prescription drug utilization than Medicare beneficiaries over 65.
- 3) Total costs, out-of-pocket costs, and prescription utilization will vary, within and between age groups, to the type of prescription drug insurance held by the beneficiary.

CHAPTER THREE

METHODS

This section describes the research and statistical methods used for this study, which includes a description of the data source, the sampling methods used for data collection, and the data sample used in the statistical analysis. The section also includes a discussion of the independent and dependent variables, along with the statistical tests and methods for this study.

Data Source

The Medicare Current Beneficiary Survey (MCBS) is a continuous, nationally representative survey of the Medicare population, administered by the Office of Strategic Planning of the Centers for Medicare & Medicaid Services (Centers for Medicare & Medicaid Services, 2008). The MCBS surveys the sample population three times per year, and information is collected using computer-assisted interviews of either the selected individual or a proxy respondent. The survey aims to collect information on the medical services, payment sources, and health insurance coverage patterns used by the aged and disabled Medicare population living either in the community or in long-term care facilities. The survey also gathers information on the socioeconomic and demographic information for the Medicare population (Agency for Healthcare Research and Quality, 2007).

The MCBS contains two public use files for each calendar year: Access to Care and Cost and Use. The Access to Care file contains data on the access to health services,

satisfaction of care, and the health status and functioning of Medicare beneficiaries. The Access to Care file contains beneficiary information for all survey recipients who were on Medicare A or B as of January 1 of the survey year and were still alive for the fall interview round.

The Cost and Use file include information of the expenses and utilization of all medical services, including inpatient care, outpatient care, physician services, prescribed medicines, durable medical equipment, home health care, hospice care, skilled nursing home services and other medical services. The cost data in the files are generated through matching Medicare claims data and administrative files with the expenses reported by survey respondents. This provides a more complete picture by matching Medicare claims data with additional expenses not covered by Medicare plans. The Cost and Use file contains information on individuals who were enrolled in Medicare at any point during the survey year. This study uses data from the 2005 Cost and Use file, which provides information on cost for full-year beneficiaries that entered the survey between 2003 and 2005.

Methods of Data Collection

The MCBS divides the United States into 107 primary sampling units (PSU), which are divided further into a total of 1,163 groups of postal zip codes. The MCBS selects Medicare beneficiaries within each sub-group based on sampling rates for each of the age categories in the survey (0-44, 45-64, 65-69, 70-74, 75-79, 80-84 and 85 or older). The varying sampling rates for each age group ensure that the survey can over-sample both the disabled population and the oldest-old age category (85 or older).

The design of the MCBS varies slightly depending on the residence of the beneficiary, but both surveys share a common core group of questions. The community beneficiary survey collects information on the individual's use of medical services, medical expenditures, insurance coverage, payment sources, health status, and socioeconomic and demographic information. If the interviewer cannot deal directly with the beneficiary, they will work with a designated proxy respondent. In gathering information on medical expenses, interviewers ask beneficiaries to keep records of insurance statements, medical bills, and prescriptions to help validate and add to existing claims data (Adler, 1994).

The survey used for beneficiaries in long-term care is a shortened version of the community survey. Interviewers establish initial contact with the facility administrator and follow-up interviews for later panels are conducted with a designated staff member who is most appropriate to answer each set of questions. The facility interviews consist of questions concerning health status, insurance coverage, residence history and cost and use of medical services. Since the survey does not directly deal with the beneficiary or family members, satisfaction questions and other attitudinal questions are omitted (Adler, 1994).

Upon collecting information from all willing, selected beneficiaries, the MCBS supplements the raw data with population weights to adjust the sample for non-responsive or under-represented population groups. The sample weights also for researchers to calculate point estimates and sample errors for the Medicare population. The survey also generates longitudinal weights to allow for statistical analysis over a multiple year period within the MCBS.

Study Sample

The central data source for this research is the 2005 MCBS Cost and Use file, which is the most recent Cost and Use file available. The 2005 Cost and Use file includes a random sample of 12,029 beneficiaries, with 2,102 of the beneficiaries under the age of 65. Beneficiary data concerning socioeconomic and demographic characteristics, along with insurance coverage, are included in data records set at the patient level. The research focuses on full-year beneficiaries without end stage renal disease. This reduces the survey sample to 11,236 beneficiaries, with 9,729 beneficiaries reporting some prescription drug use during the survey year.

In addition to these records, the Cost and Use file includes a separate record on prescribed medicine events (PME). This file includes 359,566 separate patient PME records, which include separate cost and dosage information on each prescription or refill for every beneficiary with prescription data. MCBS data on individual out-of-pocket expenses for prescriptions is present in this record. For prescription use analysis, the MCBS contains summary data available in the Person Summary record, which contains the total number of annual prescribed medicine events per beneficiary. Additional information on types of prescriptions or payment sources for prescription drugs is available by aggregating data in the PME record.

Independent Variables

The research question centers on two key independent variables, with additional independent variables considered in keeping consistent with the existing research presented. The first independent variable to consider is the age of the Medicare

beneficiary. Based on the age of the beneficiary as of January 1 of the survey year, beneficiaries are separated into six age categories (18-44, 45-54, 55-64, 65-74, 75-84 and 85+), along with general categories for under age 65 and 65 or older.

The second independent variable is the type of supplemental insurance held by the beneficiary. The survey allows the respondent to provide information on their current Medicare coverage, along with additional insurance coverage from other Medicaid, public health, Medicare HMO, Tricare or private insurance plans. Under each possible entry, the beneficiary may include information on their overall coverage, as well as if the plan specifically covers prescription medications.

With many beneficiaries having prescription coverage through multiple types of insurance, a hierarchy was created to assign every beneficiary to only one category. Any beneficiary with some prescription coverage through a Medicaid plan is placed in the Medicaid category. Any beneficiaries with Tricare or other public prescription insurance plans are categorized as having other public insurance. Remaining beneficiaries with any private or private HMO plans are lumped together in the private insurance category. A fourth level of insurance coverage includes all left over beneficiaries reporting prescription coverage through Medicare HMO plans. Finally, any beneficiaries with no insurance coverage or only prescription discount cards are labeled as uninsured.

The research may include additional independent variables, such as gender (male/female), income (less than \$10,000 per year, \$10,001 to \$20,000, \$20,001 to \$30,000 and \$30,001 or above), or ethnicity (white/non-white). This will help to ensure both population groups are similar with respect to, or may be controlled for, other possible contributing or confounding variables.

Dependent Variables

The research question presented leads to three separate dependent variables. The first dependent variable to consider is the level of use of prescription medications by Medicare beneficiaries. This information is present both in the Person Summary record and through compiling individual prescription records by beneficiary from the PME record. The summary record provides an annual total of prescription use, while the PME record allows for greater detail based on class of prescriptions used.

The second and third dependent variables in this research are the total prescription costs and out-of-pocket prescription costs for each beneficiary. This information comes from the individual prescription data in the PME record. Each prescription record contains information concerning the total cost per prescription, along payment breakdowns by each insurance plan category and out-of-pocket payment. Sorting the total prescription records by beneficiary and calculating an aggregate amount provides totals of both overall and out-of-pocket expenses per beneficiary.

Total prescription drug costs are categorized based on the coverage levels under the Medicare Part D standard benefit plan. The five levels for total costs are: zero total prescription expenditures, less than \$250 (deductible only), \$251-\$2,250 (less than the doughnut hole), \$2,251-\$5,100 (Part D doughnut hole), and greater than \$5,100 (qualifying for catastrophic coverage).

Statistical Analysis

With the analysis set to compare data for two separate groups of beneficiaries, the initial step in the statistical analysis will include both a standard t-test and a chi-square test. The t-test will allow for significance testing between groups on the continuous, dependent variables of prescription cost and use. However, the t-test may not capture the distribution differences between the two groups. For a second data comparison, the statistical results from the t-tests will help to break the continuous data into categorical groups for each cost and use variable. Chi-square tests will be conducted on the total cost categorical variables, along with the demographic variables, to determine difference between the age groups.

Linear regression will help determine factors contributing to differences between younger and older beneficiaries, with respect to total prescription use, total costs and out-of-pocket costs. In order to shift the cost distribution closer to a normal distribution, a natural log transfer is applied to both the total cost and out-of-pocket cost values for each beneficiary. In order to overcome collinearity between prescription cost and prescription use, costs per prescribed medicine event are used for the regression analyses.

The sampling weights from the MCBS will be added using SUDAAN version 10.0, in order to create a nationally representative analysis for the prescription cost and use comparisons. Linear regression will control for possible confounding variables and break the dependent variables down by supplemental insurance type.

CHAPTER FOUR

RESULTS

This chapter presents the results from the statistical analyses performed on the 2005 Medicare Current Beneficiary Survey's Cost & Use file, including estimates of total and out-of-pocket prescription drugs for both disabled and elderly Medicare beneficiaries, the distribution of total costs relative to the Medicare Part D standard benefit, and factors associated with greater prescription drug utilization and higher overall prescription drug costs.

Beneficiary Characteristics Summary

Table 1 shows key demographic and health characteristics for both elderly and disabled Medicare beneficiaries. Younger disabled beneficiaries are more likely to be male (53.2% vs. 42.1%), not married (63.1% vs. 47.7%), non-white (22.9% vs. 12.4%), and have Hispanic or Latino origin (10.8% vs. 6.8%). Younger Medicare beneficiaries also report lower education (32.0% with less than a high school education vs. 28.7%) and lower income levels (37.1% with less than \$10,000 in annual income vs. 15.5%) than elderly recipients.

Disabled beneficiaries also reported higher totals of comorbidities, multiple limitations in activities of daily living (ADLs), and overall poorer health than beneficiaries over 65. Table 1 also shows the proportions of beneficiaries reporting specific comorbid conditions. Younger beneficiaries are more likely to report strokes, diabetes, respiratory diseases, mental or psychiatric conditions, and neurological

disorders. Elderly Medicare recipients report higher levels of hypertension, cardiovascular disease, and cancer.

Table 1. Demographic and Health Characteristics of Medicare Beneficiaries in 2005

Characteristic	Non-elderly beneficiaries		Elderly beneficiaries		<i>t</i>	<i>p</i>
	Weighted n (1000s) [#]	Percentage	Weighted n (1000s) [#]	Percentage		
Total	5,524	100.0	32,515	100.0		
Sex						
Male	2,939	53.2	13,680	42.1	48.8	<0.001
Female	2,585	46.8	18,834	57.9		
Marital status						
Married	2,037	36.9	17,011	52.3	103.9	<0.001
Other	3,487	63.1	15,504	47.7		
Race						
Caucasian	4,244	77.1	28,422	87.6	51.1	<0.001
Other	1,263	22.9	4,019	12.4		
Hispanic or Latino origin	594	10.8	2,215	6.8	14.5	<0.001
Education level						
Less than high school	1,733	32.0	9,226	28.7	6.1	0.01
High school or greater	3,688	68.0	22,942	71.3		
Income level						
Less than \$10,000	2,049	37.1	5,038	15.5	99.8	<0.001
\$10,001 to \$20,000	1,748	31.7	9,393	28.9		
\$20,001 to \$30,000	735	13.3	7,106	21.9		
More than \$30,000	992	18.0	10,978	33.8		
Self-rated fair or poor health	3,071	58.9	6,327	20.7	286.1	<0.001
Hypertension	2,825	51.1	19,929	61.3	46.2	<0.001
Stroke	753	13.6	3,593	11.1	4.4	0.04
Diabetes	1,298	23.5	6,219	19.1	9.7	0.00
Respiratory disease	1,320	23.9	4,955	15.2	37.4	<0.001
Mental or psychiatric condition	3,256	58.9	5,704	17.5	416.6	<0.001
Cardiovascular disease	2,127	38.5	13,935	42.9	8.2	0.00
Arthritis	3,227	58.4	19,379	59.6	0.5	0.47
Cancer	927	16.8	10,986	33.8	206.3	<0.001
Neurological conditions	807	14.6	2,556	7.9	33.2	<0.001
Number of comorbidities						
Zero	468	8.5	3,553	10.9	9.1	<0.001
One	838	15.2	4,618	14.2		
Two	970	17.6	7,137	22.0		
Three	1,065	19.3	7,222	22.2		
Four or more	2,183	39.5	9,985	30.7		
ADL limitations						
Zero	4,119	74.6	27,413	84.3	24.9	<0.001
One or two	638	11.6	1,954	6.0		
Three or more	766	13.9	3,148	9.7		

[#] Weighted population estimates in thousands

Source: 2005 Medicare Current Beneficiary Survey, Cost and Use File

Prescription Cost and Use Summary

Table 2 shows the average total and out-of-pocket direct prescription drug costs for both disabled and elderly Medicare beneficiaries. Disabled beneficiaries report higher total prescription drug costs compared to elderly beneficiaries (\$3,206 vs. \$2,048). Yet, there is no statistically significant difference in out-of-pocket prescription costs between the two groups, as younger beneficiaries reported narrowly higher costs (\$681 vs. \$617).

In addition to reporting greater total costs, disabled Medicare beneficiaries also report a significantly greater level of prescribed medicine events during 2005 (43.3 events vs. 30.5). Adjusting the total and OOP costs for the differences in utilization levels alters the cost discrepancies between the groups. Based on an average total cost per PME, there is no significant difference between the two groups. However, younger beneficiaries have lower out-of-pocket prescription expenses per PME (\$17.62 vs. \$23.71).

Table 2. Prescription Cost and Utilization Averages for Medicare Beneficiaries in 2005

Variable	Non-elderly beneficiaries		Elderly beneficiaries		<i>t</i>	<i>p</i>
	Average	Standard error	Average	Standard error		
Total prescription drug costs	\$3,206	\$135	\$2,048	\$32	8.82	< 0.001
Out-of-pocket prescription drug costs	\$681	\$39	\$617	\$12	1.55	0.12
Prescribed medicine events	43.27	1.47	30.51	0.50	8.98	< 0.001
Average total cost per PME	\$74.47	\$2.01	\$74.08	\$1.32	0.19	0.85
Average OOP cost per PME	\$17.62	\$0.84	\$23.71	\$0.48	6.84	< 0.001

Source: 2005 Medicare Current Beneficiary Survey, Cost and Use File

Table 3 illustrates the breakdown of total costs within the Medicare Part D standard benefit for each demographic subgroup. Approximately 46% of the disabled Medicare population has total direct drug costs greater than \$2,250, which is the starting figure for the “doughnut hole” in the standard benefit, compared to only 34% of the elderly Medicare population. Additionally, 21.6% of the disabled beneficiaries have total prescription costs greater than \$5,100, which is the cost level where beneficiaries qualify for catastrophic coverage, versus less than 9% of the elderly subpopulation.

Among the disabled subpopulation, a greater proportion of female (52.6%), married (52.4%), higher education (49.8%), or higher income beneficiaries (54.2%) report total prescription cost levels at least equal to the “doughnut hole” threshold. On the other hand, 18.2% of beneficiaries with an annual income less than \$10,000 report no

total prescription drug costs, compared to only 4.9% of disabled beneficiaries with an annual income greater than \$30,000. Male, non-married, and low education disabled subpopulation have higher proportions of beneficiaries with no total direct drug costs (Table 3).

Among elderly beneficiaries, proportions of beneficiaries qualifying for the donut hole do not vary as greatly based on gender (34.8% for females vs. 32% for males), marital status (34.5% for married beneficiaries vs. 32.7% for non-married), education or income level. Other patterns of total prescription cost are present for the elderly population as well, with non-married, low education, and low income beneficiaries reporting a greater likelihood of no overall drug costs (Table 3).

Table 3. Total 2005 Prescription Drug Cost Distribution by Beneficiary Demographic Characteristics

Characteristic	Non-elderly beneficiaries					Elderly beneficiaries					p		
	est. N (1000s) [#]	\$0	\$1-\$250	\$251-\$2250	\$2251-\$5100	\$5101+	est. N (1000s) [#]	\$0	\$1-\$250	\$251-\$2250		\$2251-\$5100	\$5101+
Total	5,524	11.51%	9.32%	32.53%	25.49%	21.14%	32,515	11.01%	9.20%	46.17%	24.83%	8.79%	
Sex													
Male	2,939	14.8%	11.3%	32.5%	22.7%	18.8%	13,680	10.9%	10.3%	47.0%	23.8%	8.2%	17.7
Female	2,585	7.7%	7.1%	32.6%	28.7%	23.9%	18,834	11.1%	8.4%	45.6%	25.6%	9.2%	21.8
Marital status													
Married	2,037	5.5%	8.8%	33.3%	26.2%	26.2%	17,011	7.3%	9.5%	48.8%	25.4%	9.1%	16.5
Other	3,487	15.0%	9.7%	32.1%	25.1%	18.2%	15,504	15.1%	8.9%	43.3%	24.3%	8.4%	13.9
Race													
White	4,244	12.3%	8.4%	30.4%	25.9%	23.0%	28,422	10.9%	9.1%	45.9%	25.0%	9.0%	27.2
Other	1,263	8.9%	12.1%	39.5%	24.4%	15.2%	4,019	11.7%	9.4%	47.7%	23.9%	7.4%	4.6
Hispanic or Latino origin	594	10.6%	13.4%	34.7%	25.1%	16.2%	2,215	9.3%	13.5%	49.4%	21.5%	6.4%	2.9
Education													
Less than high school	1,733	16.8%	10.4%	30.9%	26.6%	15.3%	9,226	14.1%	9.5%	43.4%	24.5%	8.5%	6.7
High school or above	3,688	7.8%	8.9%	33.6%	25.5%	24.3%	22,942	8.9%	9.1%	47.7%	25.3%	9.0%	23.6
Income													
Less than \$10,000	2,049	18.2%	11.3%	28.8%	22.7%	19.1%	5,038	20.8%	9.1%	39.3%	23.5%	7.3%	10.8
\$10,001 to \$20,000	1,748	9.6%	8.7%	35.5%	25.1%	21.2%	9,393	11.8%	9.2%	46.5%	23.8%	8.7%	9.2
\$20,001 to \$30,000	735	6.5%	9.9%	32.7%	32.0%	18.9%	7,106	9.1%	9.8%	46.3%	26.6%	8.2%	4.0
More than \$30,000	992	4.9%	5.9%	35.0%	27.2%	27.0%	10,978	7.1%	8.9%	49.0%	25.2%	9.9%	7.7

[#]Weighted population estimates in thousands

Source: 2005 Medicare Current Beneficiary Survey, Cost and Use File

Table 4 outlines the prevalence of select chronic conditions, along with the distribution of total prescription costs for beneficiaries reporting having each comorbidity. Within the younger, disabled Medicare population, beneficiaries reporting having diabetes have the highest proportion with both at least \$2,250 and more than \$5,100 in total drug expenses. Compared to the elderly beneficiary group, disabled Medicare recipients have greater proportions with total drug costs exceeding both the doughnut hole threshold and catastrophic coverage levels for each of the nine conditions shown.

Younger beneficiaries also reported larger shares of the population qualifying for these two cost levels when looking at the number of total chronic conditions per beneficiary. Roughly 32% of younger beneficiaries with four or more comorbidities have total drug costs exceeding the catastrophic drug coverage level on the standard benefit, compared to only 18.5% of elderly Medicare recipients. In contrast, a greater share of younger beneficiaries with no comorbid conditions also report no overall prescription drug costs (70.4% vs. 61.7% for the elderly) (Table 4).

Table 4. Total 2005 Prescription Drug Cost Distribution by Beneficiary Health Characteristics

Characteristic	Non-elderly beneficiaries					Elderly beneficiaries					χ^2	p		
	est. N (1000s) [#]	\$0	\$1-\$250	\$251-\$2250	\$2251-\$5100	\$5101+	est. N (1000s) [#]	\$0	\$1-\$250	\$251-\$2250			\$2251-\$5100	\$5101+
Total	5,524	11.51%	9.32%	32.53%	25.49%	21.14%	32,515	11.01%	9.20%	46.17%	24.83%	8.79%		
Disease categories														
Hypertension	2,825	3.6%	5.7%	33.5%	31.5%	25.8%	19,929	1.9%	5.6%	49.7%	31.4%	11.5%	19.5	< 0.001
Stroke	753	3.4%	5.3%	34.7%	28.5%	28.0%	3,593	2.7%	4.0%	43.6%	34.4%	15.4%	3.5	0.01
Diabetes	1,298	0.7%	2.7%	25.1%	37.0%	34.5%	6,219	1.6%	3.6%	39.2%	37.0%	18.6%	9.6	< 0.001
Respiratory disease	1,320	3.0%	5.3%	32.3%	29.4%	30.1%	4,955	2.4%	7.1%	40.6%	33.2%	16.7%	5.2	< 0.001
Mental or psychiatric disorder	3,256	5.2%	8.0%	33.3%	27.4%	26.1%	5,704	2.7%	3.7%	39.4%	34.9%	19.3%	13.3	< 0.001
Cardiovascular disease	2,127	2.0%	4.8%	34.9%	28.6%	29.6%	13,935	2.3%	5.5%	45.4%	33.4%	13.5%	12.6	0.005
Arthritis	3,227	3.7%	6.6%	33.2%	31.5%	25.1%	19,379	4.1%	7.8%	47.4%	29.6%	11.1%	19.5	0.47
Cancer	927	2.7%	4.4%	30.2%	34.4%	28.3%	10,986	4.6%	7.9%	48.0%	28.1%	11.4%	7.2	< 0.001
Neurological disorder	807	5.5%	7.0%	34.2%	27.0%	26.3%	2,556	4.7%	4.7%	41.2%	32.4%	17.0%	2.0	0.09
Number of morbidities														
0	468	70.4%	14.2%	8.0%	3.5%	3.9%	3,553	61.7%	13.6%	21.5%	2.6%	0.7%	8.5	< 0.001
1	838	16.9%	18.5%	32.4%	14.5%	17.7%	4,618	16.2%	19.5%	49.8%	12.0%	2.5%	6.4	< 0.001
2	971	9.9%	15.1%	39.4%	21.9%	13.7%	7,137	4.7%	12.4%	58.1%	20.3%	4.5%	9.7	< 0.001
3	1,065	4.0%	7.0%	44.5%	28.0%	16.5%	7,222	2.2%	5.6%	53.0%	31.4%	7.7%	5.1	< 0.001
4 or more	2,183	1.2%	3.3%	29.0%	34.8%	31.7%	9,985	1.4%	3.2%	39.8%	37.2%	18.5%	8.8	< 0.001
Self-rated health status														
Good	2,139	10.3%	13.6%	38.0%	21.9%	16.2%	24,228	7.6%	10.4%	40.7%	32.2%	7.1%	6.6	< 0.001
Poor	3,071	4.1%	7.2%	31.6%	30.6%	26.6%	6,327	3.3%	6.0%	50.4%	24.5%	17.8%	12.9	< 0.001
ADL limitations														
0	4,119	13.4%	10.1%	32.7%	24.2%	19.6%	27,413	12.4%	9.8%	46.8%	23.6%	7.4%	25.7	< 0.001
1 or 2	638	5.6%	6.9%	36.4%	26.6%	24.6%	1,954	2.7%	5.7%	46.2%	33.1%	12.3%	3.9	0.004
3 or more	766	6.2%	7.3%	28.6%	31.4%	26.6%	3,148	3.8%	6.4%	40.8%	30.5%	18.6%	2.2	0.07

[#]Weighted population estimates in thousands

Source: 2005 Medicare Current Beneficiary Survey, Cost and Use File

Taking all types of insurance coverage into account, there is no significant difference in levels of prescription drug coverage between beneficiary groups (66.4% for the disabled vs. 68.8% for the elderly) as shown in Table 5. Younger beneficiaries are more likely to have some prescription drug coverage through Medicaid (35.1% vs. 8.3%) or private HMO plans (9.8% vs. 7.9%). Elderly Medicare recipients are more likely to pick up drug coverage through private insurance plans (39.2% vs. 21.6%) or Medicare HMO plans (13.6% vs. 6.6%).

Breaking down total costs by types of prescription insurance coverage, disabled beneficiaries with Medicaid drug coverage report the greatest levels of beneficiaries with less than \$250 in annual direct drug costs. Private HMO plans and Medicare HMO plans have the smallest level of younger beneficiaries with total drug costs exceeding \$2250. Within the elderly Medicare population, HMO plans have the smallest number of beneficiaries with more than \$2250 in prescription costs, and the largest amount with drug costs less than \$250 (Table 5).

Among both disabled and elderly beneficiaries, roughly 25% of Medicare recipients with no prescription drug coverage report no total prescription drug costs. Within the uninsured segment of the population, 12.3% of disabled beneficiaries still reported total annual prescription costs exceeding \$5,100, compared to only 3.9% of elderly Medicare beneficiaries (Table 5).

Table 5. Total 2005 Prescription Drug Cost Distribution by Beneficiary Insurance Characteristics

Characteristic	Non-elderly beneficiaries						Elderly beneficiaries						p
	est. N (1000s) [#]	\$0	\$1-\$250	\$251-\$5100	\$5101+	Total Prescription Drug Costs	est. N (1000s) [#]	\$0	\$1-\$250	\$251-\$5100	\$5101+	Total Prescription Drug Costs	
Total	5,524	11.51%	9.32%	32.53%	25.49%	21.14%	32,515	11.01%	9.20%	46.17%	24.83%	8.79%	
Prescription drug coverage													
Private insurance plan	1,191	3.0%	5.9%	32.0%	31.4%	27.7%	12,746	4.9%	7.9%	46.3%	11.6%	11.6%	9.6
Medicaid coverage	1,939	5.8%	11.2%	29.2%	28.2%	25.6%	2,696	4.0%	6.6%	42.9%	11.5%	11.5%	14.2
Private HMO plan	543	3.2%	8.7%	40.0%	31.3%	16.8%	2,552	5.6%	11.3%	56.0%	5.6%	5.6%	4.4
Medicare HMO plan	367	2.8%	7.3%	49.4%	24.4%	16.1%	4,433	5.9%	12.4%	54.8%	6.0%	6.0%	3.5
Public insurance plan	161	1.8%	2.9%	16.0%	23.8%	55.6%	1,923	2.7%	4.7%	45.9%	31.1%	15.6%	3.1
Tricare plan	131	0.9%	7.3%	40.1%	28.2%	23.6%	1,572	5.6%	3.8%	38.4%	19.1%	19.1%	1.7
Prescription drug coverage category													
Medicaid	1,939	5.8%	11.2%	29.2%	28.2%	25.6%	2,696	4.0%	6.6%	42.9%	11.5%	11.5%	14.2
Other public insurance	240	1.2%	5.9%	28.6%	24.6%	39.7%	3,400	4.1%	4.1%	42.5%	17.0%	17.0%	4.0
Private insurance	1,225	3.6%	7.1%	33.0%	30.3%	26.1%	12,982	5.0%	8.5%	47.0%	10.9%	10.9%	7.6
Medicare HMO	264	3.4%	8.0%	56.3%	21.5%	10.8%	3,287	6.3%	13.3%	57.3%	4.8%	4.8%	1.8
Uninsured	1,855	25.2%	9.5%	32.8%	20.2%	12.3%	10,150	24.4%	11.1%	43.6%	17.1%	17.1%	6.6
Has some prescription drug coverage	3,669	4.6%	9.3%	32.4%	28.2%	25.6%	22,365	5.0%	8.3%	47.4%	11.0%	11.0%	19.9

[#]Weighted population estimates in thousands

Source: 2005 Medicare Current Beneficiary Survey, Cost and Use File

Factors Associated with Prescription Cost and Use

Table 6 outlines the impact of specific health and demographic factors on the overall level of prescribed medicine events. In the overall Medicare population, higher prescription drug utilization levels are associated with disabled beneficiaries, females, white, and non-Hispanic/non-Latino Medicare recipients. Income levels are not significantly related to overall prescription usage. Recipients with either Medicaid or other public insurance drug coverage reported greater levels of utilization, as did individuals with less than a high school education level.

Medicare beneficiaries report increasing utilization levels as the number of reported chronic conditions increases. Beneficiaries reported higher prescription utilization with eight of the nine chronic conditions listed. Diabetes (14.38), hypertension (10.95), and cardiovascular disease (9.99) had the greatest impact on increasing the utilization levels, based on the number of PME per beneficiary. Overall, individuals with poor self-rated health have significantly higher levels of prescription utilization.

Table 6. Multiple Linear Regression Coefficients for Number of Prescribed Medicine Events

Variable	β	s.e.	<i>t</i>	<i>p</i>
Age				
18-64	5.64	1.32	4.28	< 0.001
65+	Reference			
Sex				
Male	Reference			
Female	5.00	0.69	7.26	< 0.001
Race				
White	Reference			
Other	-4.28	1.24	3.45	< 0.001
Ethnicity				
Hispanic	-3.42	1.36	2.51	0.01
Not Hispanic	Reference			
Insurance type				
Medicaid	14.01	1.95	7.18	< 0.001
Other public	5.21	1.78	2.92	0.004
Private	Reference			
Medicare HMO	0.23	1.21	0.19	0.85
Uninsured	-0.62	0.86	0.73	0.47
Income				
Less than \$10,000	-1.84	1.23	-1.50	0.13
\$10,001 to \$20,000	0.82	0.90	0.91	0.36
\$20,001 to \$30,000	0.35	0.88	0.39	0.69
More than \$30,000	Reference			
Education				
Less than high school	1.94	0.70	2.77	0.006
High school or above	Reference			
Disease categories				
Hypertension	10.95	0.64	17.21	< 0.001
Stroke	3.37	1.11	3.04	0.003
Diabetes	14.38	0.96	15.01	< 0.001
Respiratory disease	8.57	1.14	7.54	< 0.001
Mental or psychiatric disorder	8.44	0.85	9.91	< 0.001
Cardiovascular disease	9.99	0.62	16.07	< 0.001
Arthritis	3.62	0.86	5.71	< 0.001
Cancer	1.13	0.67	1.70	0.09
Neurological disorder	3.20	1.11	2.89	0.004
Self-reported health status				
Good	Reference			
Poor	8.20	0.76	10.78	< 0.001

Weighted population estimates in thousands

Model adjusted R² value= 0.267

Source: 2005 Medicare Current Beneficiary Survey, Cost and Use File

Table 7 reports the impact of the previously listed factors on the total cost per PME, with the table listing the regression coefficients for log-transformed cost data. Similar to the utilization data, gender, race, and ethnicity were all significant. Women report average total costs roughly 3.6% less than men, and non-white Medicare recipients have total drug costs per PME 5.93% less than white beneficiaries. Hispanic or Latino beneficiaries also report total costs per PME 7.3% lower than non-Hispanic/non-Latino recipients. Younger beneficiaries have a statistically insignificant 2.68% higher cost per PME than the elderly Medicare recipients.

Average total cost also varies, based on the recipient's income and education level. Compared to beneficiaries with more than \$30,000 in annual income, Medicare recipients earning less than \$10,000 per year have 17.4% lower average total costs per PME. In addition, beneficiaries with less than a high school education have 9.7% lower total costs per PME than those with high school or above education levels.

Total costs per prescribed medicine event also significantly vary based on insurance type. Individuals with some drug coverage through Medicaid had total costs 17.7% lower than the privately insured subpopulation. Beneficiaries without prescription drug coverage report total costs per PME that are 25.1% lower than the private group, while beneficiaries with Medicare HMO prescription plan report 30.1% lower total cost levels.

Table 7. Multiple Linear Regression Coefficients for Total Prescription Cost per PME

Variable	β	s.e.	<i>t</i>	<i>p</i>
Age				
18-64	0.0268	0.0233	1.15	0.25
65+	Reference			
Sex				
Male	Reference			
Female	-0.0371	0.0153	2.42	0.02
Race				
White	Reference			
Other	-0.0630	0.0261	2.42	0.02
Ethnicity				
Hispanic	-0.0785	0.0273	2.87	0.004
Not Hispanic	Reference			
Insurance type				
Medicaid	-0.2148	0.0350	6.13	< 0.001
Other public	0.0604	0.0292	2.07	0.04
Private	Reference			
Medicare HMO	-0.4304	0.0452	9.51	< 0.001
Uninsured	-0.3349	0.0251	13.35	< 0.001
Income				
Less than \$10,000	-0.2109	0.0326	6.48	< 0.001
\$10,001 to \$20,000	-0.1473	0.0248	5.94	< 0.001
\$20,001 to \$30,000	-0.0938	0.0248	3.79	< 0.001
More than \$30,000	Reference			
Education				
Less than high school	-0.1079	0.0200	5.40	< 0.001
High school or above	Reference			
Disease categories				
Hypertension	-0.0206	0.0200	1.03	0.30
Stroke	0.0422	0.0231	1.91	0.06
Diabetes	0.0954	0.0174	5.47	< 0.001
Respiratory disease	0.0345	0.0170	2.03	0.04
Mental or psychiatric disorder	0.1211	0.0192	6.31	< 0.001
Cardiovascular disease	-0.0131	0.0173	0.76	0.45
Arthritis	0.0336	0.0161	2.08	0.04
Cancer	0.0515	0.0166	3.11	0.002
Neurological disorder	0.0637	0.0269	2.37	0.02
Self-reported health status				
Good	Reference			
Poor	0.0011	0.0189	0.06	0.95

Weighted population estimates in thousands

Model adjusted R² value= 0.110

Source: 2005 Medicare Current Beneficiary Survey, Cost and Use File

Table 8 shows the impact of demographic and health variables on the average out-of-pocket drug costs per prescribed medicine event. In this analysis, age, ethnicity, specific comorbidities, and self-rated health status do not provide significant information. Women report average OOP costs per PME 9% higher than men, while non-white beneficiaries have OOP costs per PME 12.1% lower than white Medicare recipients.

Average out-of-pocket costs per PME are greatly influenced by the type of prescription insurance coverage held by each beneficiary. Uninsured individuals had OOP costs per PME 42.9% higher than the privately insured population. Beneficiaries with Medicare HMO drug coverage had OOP costs per PME 4.7% less than the private group, while beneficiaries with Medicaid drug coverage had OOP cost levels per PME 64% lower.

Income and education are also significant in analyzing out-of-pocket cost levels. Beneficiaries with under \$10,000 in annual income had OOP costs per prescribed medicine event 28% lower, compared to those with more than \$30,000 in annual income. Beneficiaries with less than a high school level of education report an average OOP drug cost more than 7% less than the average cost for those with high school education level.

Table 8. Multiple Linear Regression Coefficients for Out-of-Pocket Costs per PME

Variable	β	s.e.	<i>t</i>	<i>p</i>
Age				
18-64	0.0017	0.0353	0.05	0.96
65+	Reference			
Sex				
Male	Reference			
Female	0.0900	0.0194	4.64	< 0.001
Race				
White	Reference			
Other	-0.1375	0.0366	3.75	< 0.001
Ethnicity				
Hispanic	-0.0626	0.0493	1.27	0.20
Not Hispanic	Reference			
Insurance type				
Medicaid	-1.7996	0.0599	30.04	< 0.001
Other public	-0.2990	0.0303	9.88	< 0.001
Private	Reference			
Medicare HMO	-0.0497	0.0322	1.54	0.12
Uninsured	0.4296	0.0193	22.29	< 0.001
Income				
Less than \$10,000	-0.3889	0.0372	10.47	< 0.001
\$10,001 to \$20,000	-0.1975	0.0231	8.55	< 0.001
\$20,001 to \$30,000	-0.0981	0.0220	4.45	< 0.001
More than \$30,000	Reference			
Education				
Less than high school	-0.0795	0.0252	3.16	0.002
High school or above	Reference			
Disease categories				
Hypertension	-0.0213	0.0199	1.07	0.29
Stroke	0.0100	0.0300	0.33	0.74
Diabetes	-0.0276	0.0263	1.05	0.29
Respiratory disease	-0.0178	0.0228	0.78	0.44
Mental or psychiatric disorder	0.0352	0.0266	1.32	0.19
Cardiovascular disease	-0.0162	0.0199	0.81	0.42
Arthritis	-0.0201	0.0188	1.07	0.29
Cancer	0.0172	0.0193	0.89	0.37
Neurological disorder	0.0235	0.0294	0.80	0.42
Self-reported health status				
Good	Reference			
Poor	-0.0301	0.0213	1.41	0.16

Weighted population estimates in thousands

Model adjusted R² value= 0.482

Source: 2005 Medicare Current Beneficiary Survey, Cost and Use File

CHAPTER FIVE

DISCUSSION AND CONCLUSIONS

This chapter contains discussion on the findings from the statistical analyses performed, weighs the results against previous data from relevant research literature, analyzes the limitations of the results, and provides suggestions for future research and policy implications.

Prescription Cost and Utilization

The central goal of this study is to break down the level and factors for the discrepancies between younger and older Medicare beneficiaries, concerning prescription drug costs. The survey sample used for this research exhibits similar demographic and health patterns as previous literature, such as disabled beneficiaries having multiple chronic conditions, lower annual income, greater likelihood of Medicaid drug coverage, and poorer self-reported health (Riley et al., 2003; Briesacher et al. 2002). Also consistent with earlier research, disabled beneficiaries are more likely to report greater prescription use and total prescription costs. Looking at the overall levels for both total and out-of-pocket drug expenses, younger beneficiaries have a higher average total cost (\$3,206 vs. \$2,048), yet there is no significant difference in average out-of-pocket expenses (\$681 vs. \$617).

These results confirm the central hypothesis of this study, but disproves the sub-hypothesis that younger beneficiaries also paid more out-of-pocket than the elderly. This hypothesis may still hold in additional analysis, which looks at out-of-pocket costs as a

portion of income, rather than on a dollar basis. Greater total cost levels for the younger Medicare population points to a possible discrepancy between beneficiary classes when analyzing the potential impact of Medicare Part D. Using the standard benefit structure, higher total prescription drug costs for beneficiaries under 65 point to a greater likelihood of falling into the “doughnut hole”. With younger Medicare recipients reporting lower income levels, this population would experience a greater relative financial impact related to the lack of Part D drug coverage between \$2,250 and \$5,100 in total drug expenditures.

In this current study, total prescription costs vary based on the insurance coverage held by each beneficiary, as other earlier reports established (Riley et al., 2003; Foote & Hogan, 2001). Within the disabled Medicare population, less than a third of beneficiaries with Medicare HMO drug coverage report total prescription costs above \$2,250, while the proportion drops to less than one-fourth in the elderly population. In contrast, more than 53% of the disabled with Medicaid coverage reached this plateau, along with 56% with private insurance. Amongst the elderly beneficiaries, more than 46% and 39% of recipients with Medicaid and private coverage reached the initial cutoff point for the Part D “doughnut hole”. On the other end of spectrum, roughly 25% of all Medicare beneficiaries with no drug coverage reported no total drug expenses, compared to roughly 5% of covered beneficiaries. This large change in cost patterns may be due to better health conditions, lower need for prescription drugs, or an inability to receive or afford appropriate medications.

This current research also outlines possible problems for “dual eligibles” in the transition to Medicare Part D plans. Medicare beneficiaries with additional prescription

coverage through Medicaid may experience changes in their coverage levels, prescription formularies, or overall out-of-pocket expenses as part of the automatic transition to a Part D plan (Nemore, 2005). Younger beneficiaries are likely to experience greater problems during the transition, as more than 35% of the younger beneficiaries report some prescription coverage through Medicaid, compared to 8% of the elderly. In addition, more than 53% of disabled beneficiaries report total prescription costs in excess of \$2,250. Initial cost pressures, reliance on low income subsidies, and possible prescription access issues related to this transition period will affect this disabled population that is already reporting greater health and financial issues.

As outlined in earlier research, younger beneficiaries report greater utilization of prescription medications (Briesacher et al., 2002; Poisal & Chulis, 2000). Disabled Medicare beneficiaries reported annual prescription utilization levels roughly 30% higher than their elderly counterparts. This increased utilization is a large reason behind the differences in total prescription costs, as utilization rates have a greater influence on prescriptions costs than other demographic or health variables (Wei, Akincigil, Crystal & Sambamoorthi, 2006). When adjusting the total and out-of-pocket costs for utilization, the significant differences between younger and older beneficiaries reverse, with the study showing no significant differences in total costs per PME. Furthermore, disabled beneficiaries report lower out-of-pocket costs per PME, while the overall OOP costs showed no significant difference. This discrepancy in out-of-pocket costs per prescription points toward a possible influence by insurance types or specific chronic health conditions, as outlined in earlier research (Briesacher et al., 2002; Riley et al., 2003).

Overall, the cost and use findings from this research study will provide a baseline for future longitudinal research on prescription trends within the Medicare population. Given the differences between younger and older beneficiaries, it is important to track how prescription expenses and utilization changes during the implementation of Medicare Part D plans.

Factors Associated with Prescription Costs and Utilization

While age is hypothesized to play a significant role in the differences of prescription cost and utilization, the younger-older classification was only significant in prescription utilization measurements, when controlling for gender, race, ethnicity, income, education, insurance type, presence of certain chronic conditions, and self-reported health status. Each of the controlling factors above, with the exception of income level, was significant in determining the overall expected prescription utilization levels. With total costs per PME, age and self-reported health status are no longer significant, but income level becomes significant for this dependent variable. In switching from total costs to out-of-pocket costs, only gender, race, income, education, and insurance type remain significant.

Based on overall annual prescription utilization averages, younger beneficiaries report greater medication usage than the elderly populations. However, the difference of nearly 13 prescribed medicine events per year is reduced when controlling for other key demographic and health factors. Age is still significant among Medicare beneficiaries, but the expected difference decreases to less than six PMEs per year, after adjusting the model. Considering the factors controlled for in the model, this increased utilization begs

the question of the source of the difference. Additional research may point toward changes in prescriptions due to affordability, poor reaction to the medication, or possible interactions with other chronic medications.

Differences based on gender and race within the Medicare populations follow the results of earlier prescription research highlighting these trends. Increased utilization is female Medicare recipients may results from higher average age of elderly females on Medicare, along with the increased utilization of specific drug classes, such as analgesics, hormones, and some anti-depressants (Correa-de-Araujo, Miller, Banthin & Trinh, 2005). The current study also outlines the greater use of prescription drugs by white Medicare beneficiaries, at a level of roughly four additional prescriptions per year. Research suggests that some contributing factors to the racial divide include the gender and racial composition of older beneficiaries, along with the general access to medical care in communities with higher concentrations of minorities (White-Means, 2000).

As hypothesized, the prescription insurance type had an association with the total and out-of-pocket costs, along with the overall utilization levels. Within the Medicare population, elderly beneficiaries are more likely to report having some prescription coverage through privately purchased or employee-sponsored plans, while more disabled beneficiaries report prescription coverage through a Medicaid plan. Medicaid insurance coverage results in a predicted increase of utilization of roughly 14 prescribed medicine events per year. While other contributing factors may exist, the cost-utilization correlation serves as a possible rationale for the additional utilization. With total costs per PME for Medicaid plans averaging 17% less than private plans and out-of-pocket

costs set 64% less, beneficiaries on limited incomes can afford a greater number of prescriptions with Medicaid drug coverage.

This difference highlights questions on the use of generic drug prescription patterns, along with the levels of possible prescription non-adherence differences, based on insurance types. With younger beneficiaries comprising a larger part of the Medicaid population, this sicker and poorer population may receive more medications to manage multiple conditions, while also needing to determine the affordability of multiple medications.

These concerns are also raised when analyzing the difference in cost and use based on income level. Beneficiaries with less than \$10,000 in annual income report slightly lower prescription use compared to those earning more than \$30,000 per year. However, the out-of-pocket costs per prescription, while adjusting for other factors, are nearly 30% less for the former group. The possibility of a greater level of generic prescription usage is also highlighted by the steadily decreasing total costs per PME, as annual beneficiary income levels decrease.

Study Limitations

There are several limitations with the research performed in this study. First, the use of the MCBS raises limitations related to the use of secondary data analysis and the structure of the prescription event data used in this research. The cost and use information in the MCBS relies primarily on self-reported data. While some beneficiaries have additional information added on the person summary level from administrative sources, the prescription event files focus on the prescriptions as reported

from the survey respondent. Along with general problems with self-reported prescription use, some researchers believe that self reporting may result in underreporting drug costs by up to 17% and prescription utilization by nearly 18% (Poisal, 2003). Additionally, the aggregated totals for out-of-pocket costs in this research focus on direct drug costs from 2005, while using 2006 Part D standard benefit levels. Due to incremental cost inflation on an annual basis, both per-capita costs for prescription medication and the number of beneficiaries entering and leaving the “doughnut hole” are expected to increase.

Second, the composition of the survey sample presents two possible limitations. First, the Cost and Use file of the MCBS includes partial-year beneficiaries, in order to capture survey respondents that die during the survey year. This collection of beneficiaries is targeted in the survey as individuals spend more on medical care during the last year of life. Since partial-year beneficiaries are not included in the event level information on prescription medications, it is not possible to include the group in the analysis, due to a lack of out-of-pocket cost information. Secondly, the overall sample used includes all full-year, non-ESRD Medicare beneficiaries. While community-dwelling and institutionalized beneficiaries exhibit different spending patterns, the research performed did not exclude one of the two groups for better data consistency (Poisal and Chulis, 2000).

Finally, the operational definitions of the chronic conditions and the types of insurance coverage held by the beneficiary create limitations in generalizing the research findings. The total cost breakdowns by chronic condition include all prescription costs for all conditions, and only focuses on whether or not the beneficiary reports having one specific comorbidity. The costs of prescription care and levels of utilization directly

related to a specific condition are somewhat masked by the multiple comorbidities reported by many beneficiaries. Additionally, numerous Medicare beneficiaries report having multiple types of prescription drug insurance. While the insurance hierarchy helps identify main sources of insurance, it fails to account for the true differences between insurance coverage types and the effects of both primary and secondary insurance plans (Safran, Neuman, Schoen, Kitchman, Wilson, Cooper, et al., 2005).

Conclusions

This research study demonstrates that younger Medicare beneficiaries exhibit greater total cost and prescription utilization levels compared to elderly beneficiaries. When controlling for utilization, younger and older beneficiaries show no significant difference in total costs, while younger beneficiaries pay less out-of-pocket per prescribed medicine event. When analyzing additional contributing factors, gender, race, ethnicity, insurance type, education, and the presence of select chronic conditions all influence the expected prescription utilization levels for Medicare beneficiaries. Insurance type, income, race, and education level also show strong associations with the total cost and out-of-pocket cost per PME. As a result, the findings of this research raise several key clinical and policy questions and considerations for future research.

Clinical Implications

The increased number of prescribed medicine events for younger Medicare beneficiaries, when controlling for other factors like chronic conditions, insurance type, and income, raises some possible concerns for the reasons behind differing prescribing patterns. Younger beneficiaries report more ADL limitations and chronic conditions than

the elderly recipients. This poor health condition could leave younger beneficiaries with a greater likelihood for drug interactions, changes in formulary coverage, or other reasons to change a medication plan already in progress.

The decreasing level of out-of-pocket costs and total costs per PME also raises questions on the use and efficacy of generic drugs for Medicare beneficiaries. If lower income beneficiaries and those with Medicaid (and soon to be Part D) coverage receive more generic medications, clinicians also need to be mindful of the effectiveness of these medications in combination with other prescriptions that are part of the beneficiaries course of treatment.

Finally, while working-age beneficiaries report out-of-pocket cost levels that are only slightly greater than the average in the elderly Medicare population, it is important to also consider the lower average income levels of the younger beneficiaries. Out-of-pocket costs are therefore more likely to constitute a large percentage of a working-age beneficiary's available income. With less disposable income, disabled beneficiaries may be at a higher risk of cost-related prescription non-adherence, as medication costs continue to rise or greater cost-shifting occurs within prescription drug insurance plans.

Policy Implications

Working-age Medicare beneficiaries will be greatly affected by the transition into Medicare Part D plans, due in part to the greater prevalence of Medicaid drug coverage. The transition between plans may affect the total costs, out-of-pocket costs, and formulary access of key medications. While much focus for the Part D transition is on the effects on the elderly, it is important for policymakers to keep in mind the different needs and characteristics of the disabled Medicare population.

Sweeping changes in cost or access to prescription drugs may greatly alter the levels of prescription adherence and overall health status of Medicare beneficiaries currently covered by Medicaid. With working-age beneficiaries reporting much higher rates of psychiatric and mental conditions, it is important to focus on the inclusion of related medications in Part D prescription drug plans for the auto-enrolled population currently on Medicaid.

With younger beneficiaries reporting lower annual income levels, it is also crucial to focus on beneficiary education and assistance in applying for available low-income subsidies (LIS). With the LIS structured to reduce the impact of prescription drug plan premiums and copays, this type of additional assistance could help improve access to medications, reduce cost-related non-adherence, or offer some beneficiaries an affordable alternative to only affording generic medications.

Future Research Implications

The research results of this study offer initial suggestions to the differences between younger and older beneficiaries. First, more detailed analysis on the payments made by specific insurance types for key chronic conditions can help better predict the impact of policy changes on the Medicare population. With some insurance types offering more restrictive coverage of conditions, such as mental and psychiatric disorders, it is not possible to make specific recommendations on specific conditions. Additionally, a focus on a single chronic condition would allow for greater detail in the refinement of therapeutic classes of drugs and the costs associated with specific treatment regimens.

Second, the results of this study provide a general baseline for a longitudinal analysis around the implementation of Medicare Part D. Using this information, along with future data, researchers will be able to determine the populations affected by changes in policy and make more specific recommendations for additional policy reform. The baseline data will also allow for monitoring of the cost and utilization divides between age groups and other factors, in order to determine possible inequities in medical care.

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