Recent Trends in Prescription Drug Use and Expenditures by Medicaid Enrollees

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Background: As prescription drug expenditures consume an increasingly larger portion of Medicaid budgets, states are anxious to control drug costs without endangering enrollees' health. **Objective**: We use the 2001/02 and 2007/08 Medical Expenditure Panel Survey to analyze recent trends in Medicaid prescription drug expenditures by therapeutic classes and subclasses. Identifying the fastest growing categories of drugs, where drugs are grouped into clinically relevant classes and subclasses, can help inform policymakers' efforts to contain costs. **Findings**: We found that total drug expenditures for Medicaid enrollees increased by 47.4 percent from 2001/02 to 2007/08. In 2007/08, the top five therapeutic classes ranked by total annual expenditures were psychotherapeutic drugs, cardiovascular drugs, CNS agents, respiratory agents and antidiabetic agents, while the top five therapeutic subclasses were antipsychotics, anticonvulsants, antihyperlipidemics, asthma controller medications and antidepressants. More than a third (35.8 percent) of the estimated $42.1 billion in Medicaid drug expenditures was attributable to these five subclasses, which had expenditures totaling $15.1 billion in 2007/08. The percentage of prescriptions dispensed as generics increased from 45.4 to 60.0 percent during the period of our study. The fastest growing subclasses − including antipsychotics, CNS stimulants, and angiotensin inhibitors – had low rates of generic penetration and rapid increases in the population with use. In contrast, subclasses such as antihistamines and metformins – had declining total expenditures as generic penetration increased and expenditures per user fell.

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Introduction

Prescription drugs are important inputs into the health of Medicaid enrollees and play a critical role in the treatment of persons with chronic conditions. Drugs are also a rapidly growing component of the Medicaid budget (Levit et al., 2004; Holahan & Ghosh, 2005). In the past decade, state Medicaid programs have sought ways to control health care costs without endangering enrollees' health. Common approaches include restrictions on drug benefits through step therapy, prior authorization, tiered copayments, quantity limits, preferred drug lists (PDL) and generic substitution (Kaiser Commission on Medicaid and the Uninsured, 2004 & 2005). Changes in market conditions may have also contributed to increased use of generic drugs by Medicaid enrollees. In particular, the proportion of drugs dispensed as generics in the United States increased rapidly in recent years as a number of top-selling drugs in heavily used classes such as antidepressants, antihypertensives, antihyperlipidemics and antidiabetics lost patent protection (Aitken, Berndt & Cutler, 2009; Zhang et al., 2008; Yin et al., 2008; U.S. Food & Drug Administration, 2010).

The implementation of Medicare Part D was a major policy change at the national level with implications for drug use and expenditures by Medicaid enrollees. In 2006, dual eligibles ─ persons who are eligible for both Medicaid and Medicare ─ began receiving drug benefits through Medicare Part D rather than Medicaid. Recent studies have examined Medicaid claims data before, and after, 2006 to document the implications of this change for drug expenditures financed directly by Medicaid (Farley & Dusetzina, 2010; Bruen & Miller, 2008). These studies provide indirect evidence on drug spending by dual eligibles as they identify breaks in trends in Medicaid claims data, but they are not able to track utilization and expenditures consistently before and after the shift to Medicare Part D.

A previous paper by Banthin and Miller (2006) used Medical Expenditure Panel Survey (MEPS) data to examine drug use and expenditures by Medicaid enrollees for the years 1996/97 to 2001/02, a period largely characterized by the rapid uptake of new drugs. In this paper, we used the most current MEPS data (2001/02 to 2007/08) to examine more recent trends in a period largely characterized by increased utilization of generic drugs. The contribution to the literature in the first paper was to examine drug use and expenditures at the therapeutic class and subclass levels and we continue with the same approach here. Drugs within a subclass share a mechanism of action (e.g., beta blockers) and/or treat the same types of conditions (e.g., antidepressants), while drugs within a class treat a broader set of conditions (e.g., cardiovascular drugs). Focusing on drug subclasses and classes, therefore, allows us to examine smaller markets within the larger market of all outpatient prescription drugs. These analyses may also suggest different policy interventions depending on the number and substitutability of drugs within a subclass or class, the presence of generics, and other factors that vary by subclass and class. In particular, promoting therapeutic substitution − switching from a brand name drug to the generic form of a different drug within the same subclass or class − where clinically appropriate, has the potential to achieve large savings for Medicaid programs.

In our study, we use the MEPS data to examine drug use and expenditures by a nationally representative sample of Medicaid enrollees. We break down changes in total drug expenditures into changes in the population with use and changes in annual expenditures per user. By tracking the population with use, the analysis can be used to assess the impact over time of changes in the treated prevalence of conditions. Annual expenditures per user are policy-relevant measures of the cost of prescription drugs at the level of a patient year, especially for drugs used to treat chronic conditions. We undertake these analyses for all drugs and for the

4

therapeutic classes and subclasses of drugs with the highest expenditures in the Medicaid population in 2007/08. We also track changes in the percent of prescriptions that are generic versus brand name. Finally, we highlight differences in utilization between four policy-relevant subpopulations of Medicaid enrollees: children, adults, disabled adults, and the elderly. Although we do not separately identify the dual eligibles, they are included in our analyses of disabled and elderly adults.

Data and Methods

The Medical Expenditure Panel Survey (MEPS), sponsored by the Agency for Healthcare Research and Quality (AHRQ), is an ongoing survey that collects nationally representative data on health care utilization, expenditures, sources of payment, insurance coverage, and health status for the U.S., civilian, non-institutionalized population. These and additional demographic and socioeconomic data are collected for all individuals in sampled households through computer-assisted personal interviews. Household reports on use of services are supplemented with information on third-party payments and billing codes from medical care providers' billing records. Further details on the design of the MEPS are available elsewhere (Cohen, 2003).

Compared to Medicaid claims data, the MEPS Prescribed Medicines (PMED) data has the advantage of capturing all drug use and spending by Medicaid enrollees including use and spending by persons enrolled in Medicaid capitated managed care (Centers for Medicare & Medicaid Services, 2009, 2010 & 2011; Crystal et al., 2007). In the MEPS PMED data, household respondents provide initial information on drug use and are then asked to sign permission forms that allow a follow-back survey of the pharmacies where drugs were purchased. Pharmacies are asked to provide computerized printouts containing information on

5

the medication name, national drug code (NDC), strength, quantity, total payments, and payments by source. The pharmacy-based data improve the accuracy of MEPS estimates of prescription drug expenditures and provide important detail, including sources of payments for drugs, that household survey respondents may otherwise be unable to report. Pharmacies for which a signed permission form was obtained from the household authorizing contact were eligible for data collection. The pharmacy response rate, conditional on permission, was 79.9 percent in 2006 (Stagnitti et al., 2008). An imputation procedure matches pharmacy based data to household reports when there are missing pharmacy data (Moeller et al., 2001). MEPS expenditure estimates for prescription drugs reflect retail prices paid at pharmacies and do not reflect rebates that manufacturers pay to state Medicaid programs as required by federal law. These rebates are confidential and information on the rebate amounts is not publicly available.

For this study we assigned each drug mentioned in the MEPS to a therapeutic class, subclass, active ingredient and brand name using the NDC to link to the Multum Lexicon database, a product of Cerner Multum, Inc (Multum). The Multum therapeutic classification system categorizes drugs into clinically relevant therapeutic categories which allow us to examine drugs used to treat specific medical conditions. In our data, about 5.0 percent of prescriptions linked to more than one therapeutic class and an additional 5.4 percent of prescriptions linked to more than one therapeutic subclass. We assigned those prescriptions to a unique class and subclass using household reported information on the condition(s) the drug was intended to treat. The Multum classification system was revised during the period of our study. To account for this revision, we standardized therapeutic classifications for all data years to 2007 Multum values. In a few cases, we also modified the Multum hierarchy, or combined subclasses to create policy relevant categories.

In order to increase sample sizes and statistical power to detect changes over time, we combined two years of MEPS data to estimate both the starting point and endpoint of our trend analysis. Combining two years of data also permits us to examine separate demographic groups within the Medicaid community population. Specifically, we combined data from 2001 and 2002 for the baseline and data from 2007 and 2008 for the endpoint, and computed average *annual* estimates based on these years. For this study, all drug expenditures are adjusted to constant 2008 U.S. dollars.

We defined the Medicaid population to include anyone who was enrolled in Medicaid or the Children's Health Insurance Program (CHIP) for at least one month in a given year and include their drug expenditures for the entire year. The MEPS does not allow us to separately identify children who are covered under Medicaid or CHIP. We use this broad definition because the majority of eligible but unenrolled individuals have contingent coverage. (In some cases, CHIP eligible individuals do not have contingent coverage because CHIP programs are funded by block grants, which may be exhausted, and because CHIP programs may impose waiting periods). Less than 2 percent of our sample had one month of Medicaid / CHIP enrollment while more than 80 percent of our sample were enrolled for at least half the year. We did not control for months of enrollment, but found no significant change in the average months of enrollment, or the distribution of months enrolled from 2001/02 to 2007/08. Our total sample included 28,539 person-year observations with positive sample weights, representing 39.9 million persons in 2001/02 and 48.8 million persons in 2007/08. These population estimates are somewhat lower than administrative counts published by the Centers for Medicare and Medicaid Services (CMS) (Centers for Medicare & Medicaid Services, 2010). It has been estimated that

the MEPS undercounts Medicaid enrollment by approximately 10 to 12 percent after adjusting for various definitional differences between the two estimates (Banthin & Sing, 2005).

We also include the dual eligibles in our analysis because they remain a subgroup of significant policy interest and the MEPS has the unique ability to continuously follow this high-use population as they transition from Medicaid to Medicare Part D. Including the dual eligibles in our analysis is also reasonable from a financing point of view as states continue to finance most (initially 90 percent, then 75 percent) of the drug spending by dual eligibles through "clawback" provisions (Kaiser Commission on Medicaid and the Uninsured, 2004).

We examine drug use by four policy-relevant subgroups of the Medicaid population: all children ages 0 through 18, non-disabled adults' ages 19 through 64, disabled adults ages 19 through 64, and all elderly enrollees age 65 and over. Dual eligibles, who are covered by both Medicare and Medicaid, are concentrated among our groups of disabled adults and elderly. We define disability status for adults using detailed health and disability measures collected in the MEPS. Disabled adults are those who reported limitations in instrumental or usual activities of daily living, physical, cognitive, or work limitations, vision or hearing impairments, or reported using physical- functioning assistive devices. Our definition of disability, however, does not necessarily match the administrative enrollment status, which is not collected in the MEPS data. Administrative determinations of disability rely on legal definitions as well as length and severity of disability that are not measured in the MEPS. For this reason we do not attempt to separately identify disabled children. The distribution of our sample across these four subgroups matches fairly closely the distribution published by the Centers for Medicare and Medicaid Services (Centers for Medicare & Medicaid Services, 2010).

Results

Overall Trends

In Table 1, we present estimates of drug use and expenditures for the total non-institutionalized Medicaid population and for our four subgroups defined by age and disability status. Total expenditures for prescription drugs purchased by Medicaid enrollees increased 47.4 percent, in constant 2008 U.S. dollars, from $28.6 billion in 2001/2002 to $42.1 billion in 2007/2008. Over the same period, the total number of prescriptions increased by 35.5 percent from about 429 million to 582 million. Expanded Medicaid enrollment accounted for a portion of the observed growth in use and expenditures. The total number of persons enrolled in Medicaid increased 22.2 percent, from 39.9 to 48.8 million, and the total number of Medicaid enrollees who purchased at least one drug during the year increased by 15.5 percent from 25.0 million in 2001/02 to 28.9 million in 2007/08. Intensity of drug use also played a role in increasing total expenditures as the average number of prescriptions filled increased from 17.1 to 20.1 per user and average expenditures increased by 27.6 percent from $1,142 to $1,456 per user. An increase, from 45.4 to 60.0 percent, in the portion of prescriptions dispensed as generics, on the other hand, played a role in slowing aggregate and per user expenditure growth.

Both Medicaid and SCHIP enrolled children and nondisabled adults, who are often the parents of enrolled children, experienced large percentage increases in total expenditures for prescription drugs. Among children, total expenditures increased by 71.5 percent, from $3.7 to $6.4 billion, while expenditures for nondisabled adults increased by 66.6 percent, from $5.0 to $8.3 billion. For children, expenditure growth primarily resulted from a 53.5 percent increase in expenditures per user to $492 in 2007/08. For nondisabled adults, expenditure growth resulted

9

from both a 25.1 percent increase in the number of users and a 33.2 percent increase in expenditures per user, to $1,089 in 2007/08.

Disabled adults and elderly persons enrolled in Medicaid also had substantial increases in total drug expenditures. Expenditures for disabled adults increased 40.6 percent from $12.4 to $17.4 billion while expenditures for the elderly grew 34.0 percent from $7.5 to $10.1 billion. For both groups, increased intensity of use was the primary driver of expenditure growth. For disabled adults, expenditures per user increased 21.9 percent from $2,977 in 2001/02 to $3,629 in 2007/08. Among the elderly, prescriptions filled per user increased 21.6 percent, from 38.4 to 46.7 prescriptions per person, and expenditures increased 20.1 percent from $2,331 to $2,800 per user.

The most intensive users of prescribed medications were disabled adults, with expenditures per user in 2007/08 more than seven times as high as the estimate for children and more than three times the estimate for nondisabled adults. More than 90 percent of disabled adults and elderly Medicaid enrollees used at least one drug per year in 2007/08, compared to 65.8 percent of nondisabled adults and 46.2 percent of children. Elderly enrollees (46.7) and disabled adults (45.2) had nearly three times as many prescriptions per user as nondisabled adults (15.7) and more than seven times as many as children (5.9). In 2007/08, a lower percentage of children's prescriptions (52.3 percent) were dispensed as generics compared to generic dispensing rates of 60.3 to 62.0 percent for the three adult groups. Children also had a higher rate of per user expenditure growth (53.5 percent) than the other three groups (20.1 to 33.2 percent).

Changes by Therapeutic Categories

The overall trends in prescription drug expenditures mask big changes at the level of therapeutic class and subclass, which are presented in Tables 2 and 3. Table 2 presents trends in total annual expenditures and the percent of annual prescriptions dispensed as generics for 2001/02 and 2007/08. Table 3 presents trends in the annual population with use as well as annual expenditures per user for 2001/02 and 2007/08. Tables 4 and 5 present the number of persons with use by therapeutic class and subclass for each subgroup to examine changes in patterns of prescription drug use within each of these populations from 2001/02 to 2007/08.

Psychotherapeutic Drugs

In 2007/08, psychotherapeutic drugs were the largest class of drugs among the noninstitutionalized Medicaid population ranked in terms of total expenditures. Overall, expenditures for these drugs grew by 58.2 percent from $4.4 billion in 2001/02 to $7.0 billion in 2007/08 dollars and the number of users increased 24.5 percent from 4.3 to 5.4 million enrollees (Tables 2-3). However, changes in use and expenditures for the two subclasses of psychotherapeutic drugs − antipsychotics and antidepressants − were quite different.

Expenditures for antipsychotic drugs more than doubled from $2.1 billion in 2001/02 to $4.6 billion in 2007/08 making them the largest subclass of drugs purchased by Medicaid enrollees (Table 2). The expenditure increase resulted from both an increase in the number of users, from 1.3 to 2.0 million enrollees, and an increase in expenditures per user, from $1,645 to $2,356 (Table 3). In 2007/08, 1.0 million disabled adults and about 0.4 million children used at least one antipsychotic medication during the year (Tables 4-5). Overall, about one-fifth (22.8 percent) of antipsychotic prescriptions were dispensed as generics in 2007/08 (Table 2).

11

Spending for antidepressants totaled about $2.3 billion in both time periods (Table 2). The population using these drugs increased 21.8 percent from 3.7 million in 2001-02 to 4.5 million in 2007/08, but the average annual expenditures per user *declined* by 18.2 percent from $635 to $519 (Table 3) as the percentage of antidepressants dispensed as generics nearly doubled, rising from 31.6 to 61.6 percent (Table 2).

Cardiovascular Drugs

Cardiovascular drugs were the second largest class of drugs among the noninstitutionalized Medicaid population ranked in terms of total expenditures with $6.6 billion spent in 2007/08. The percentage of cardiovascular drugs dispensed as generics increased from 48.5 percent in 2001/02 to 70.9 percent in 2007/08 (Table 2). Over the same period, the population using at least one cardiovascular drug during the year increased by 34.9 percent from 5.9 million to 7.9 million and the average expenditure per user dropped from $903 to $828, $p < .10$, (Table 3).

Expenditures for antihyperlipidemic drugs rose 65.2 percent from $1.6 to $2.7 billion (Table 2) as the population using these drugs more than doubled from 1.9 million in 2001/02 to 4.0 million in 2007/08 (Table 3). Over the same period, the average expenditure per user fell by 22.2 percent, from $872 to $678 (Table 3), as the percentage of prescriptions dispensed as generics jumped from 6.5 to 44.5 percent (Table 2). Two top-selling antihyperlipidemic drugs ─ simvastatin (Zocor) and pravatstin (Pravachol) ─ first became available as generics during the period of our study (U.S. Food & Drug Administration, 2010 & 2011).

The other five subclasses of cardiovascular drugs are primarily used to treat hypertension. Two of these subclasses ─ antihypertensive combinations and angiotensin II receptor blockers (ARBs) ─ had large increases in total expenditures from 2001/02 to 2007/08 (Table 2) as the

number of users rose rapidly and expenditures per user increased or did not change (Table 3).

ARBs, and antihypertensive combinations containing ARBs, were not available as generics by

the end of our study period. The remaining antihypertensive subclasses ─ beta blockers, calcium

channel blockers (CCBs) and angiotensin converting enzyme inhibitors (ACEIs) ─ had generic

dispensing rates ranging from 83.4 to 94.2 percent (Table 2) and had decreases in average

expenditures per user of 25.0 to 69.8 percent from 2001/02 to 2007/08 (Table 3). ACEIs and

CCBs also had large percentage decreases in total expenditures (Table 2).

Central Nervous System (CNS) Drugs

Expenditures for CNS drugs, the third largest class of drugs in the noninstiutionalized Medicaid

population, nearly doubled from $3.2 billion in 2001/02 to $6.1 billion in 2007/08 (Table 2).

The rapid increase in expenditures resulted from a 28.5 percent increase in the population with

use, from 5.3 to 6.9 million, and a 49.3 percent increase in expenditures per user from $601 to

$897 per year (Table 3).

The largest subclass of CNS drugs ─ anticonvulsants ─ were used by individuals in our

sample to treat a variety of conditions including epilepsy, convulsions, mood disorders and

anxiety disorders. Several drugs in the anticonvulsant category have multiple labeled and off-

label uses. Expenditures for these drugs increased by 63.7 percent, from $1.9 billion in 2001/02

to $3.1 billion in 2007/08 (Table 2). This was largely due to a 33 percent increase in the total

number of Medicaid enrollees using anticonvulsants from 2.5 to 3.3 million persons (Table 3).

Use of anticonvulsants among nondisabled adults doubled to 0.9 million persons (Table 4), but

disabled enrollees, with 1.5 million persons using anticonvulsants, were still the heaviest users of

these drugs (Table 5). A number of anticonvulsants were available as generics prior to 2001.

However, three widely-used anticonvulsants ─ gabapentin (Neurontin), lamotrigine (Lamictal) and divalproex sodium (Depakote) ─ first became available as generics during the period of our study (U.S. Food & Drug Administration, 2010 & 2011). As a result, the overall percentage of anticonvulsants dispensed as generics increased from 41.3 to 52.2 (Table 2).

The other large subclass of CNS drugs is stimulants such as methylphenidate (Ritalin and Concerta) which are primarily used to treat attention deficit hyperactivity (ADHD) disorder. Total expenditures for stimulants more than quadrupled (increased by 325 percent) from 356 million in 2001-02 to 1.5 billion in 2007/08 (Table 2). This rapid increase resulted from an 82.9 percent increase in users, from 0.8 to 1.5 million persons, and a 132.2 percent increase in expenditures per user from $427 to $992 per year (Table 3). The 1.2 million children who used at least one stimulant per year in 2007-08 accounted for about 80 percent of all stimulant users in the Medicaid population (Table 4).

Respiratory Drugs

Total expenditures for respiratory drugs, the fourth largest class of medications in the Medicaid population, increased by 43.1 percent from $2.7 billion in 2001/02 to $3.9 billion in 2007/08 (Table 2) as a result of a 51.0 percent increase in expenditures per user from $281 to $425 (Table 3). In 2007/08, 9.2 million Medicaid enrollees used respiratory drugs with 5.0 million children comprising the majority of persons using these drugs (Tables 3-4).

The largest subclass of respiratory drugs ─ asthma controller medications ─ are used to prevent the onset of the symptoms of asthma, and related conditions, by reducing airway inflammation and constriction (National Asthma Education & Prevention Program, 2007). Expenditures for asthma controllers more than doubled from $1.1 to $2.4 billion due to a 43.1

percent increase in users, from 1.9 to 2.7 million enrollees, and a 47.2 percent increase in expenditures per user from $632 to $930 per year (Tables 2-3). Nearly all of the increase in controller use resulted from an 86.3 percent jump in the number of children using these medications from 0.8 to 1.5 million (Table 4). In 2007/08, only 6.0 percent of asthma controller medications were dispensed as generics (Table 2).

Total expenditures for asthma relievers, which are used to treat the acute symptoms of asthma and related conditions, increased from $0.7 to $1.0 billion as the number of users increased from 3.0 to 3.6 million enrollees. Total expenditures for antihistamines declined by 50.1 percent as the generic percentage increased from 29.8 to 75.9 percent, the number of users declined by 14.6 percent and the average annual expenditures per user declined by 41.5 percent. Loratadine (Claritin), which was one of the top 20 drugs in total sales in the Medicaid population in 2001/02, became available in generic and over the counter versions during the period of our study (U.S. Food & Drug Administration, 2010 & 2011).

Antidiabetic Drugs

Total expenditures for antidiabetic drugs, the fifth largest class in the Medicaid population, increased by 45.0 percent from $2.0 billion in 2001/02 to $2.9 billion in 2007/08 (Table 2). This was entirely due to a 43.0 percent increase in the number of users from 2.0 to 2.8 million persons (Table 3). The percentage of antidiabetic prescriptions dispensed as generics more than doubled from 21.9 percent in 2001/02 to 47.3 percent in 2007/08 (Table 2) while the average annual expenditure per user was approximately $1,000 in both time periods. The elderly (1.1 million) and disabled adults (1.0 million) were the heaviest users of antidiabetic medications.

The two subclasses of antidiabetic medications which had no generics available ─ insulin and thiazolidinediones (TZDs) ─ both had rapidly rising expenditures. Total expenditures for insulin more than doubled from $0.6 billion in 2001-02 to $1.3 billion in 2007/08 (Table 2) primarily due to a 77 percent increase in expenditures per user from $719 to $1,271 per year (Table 3). Expenditures for (TZDs) increased by 80 percent to $0.9 billion primarily due to a 66.3 percent increase in the population with use. Expenditures for the two remaining antidiabetic subclasses ─ metformins and sulfonylureas ─ declined by about one-half and two-thirds, respectively, as generic percentages for both types of oral antidiabetic medications rose to approximately 90 percent by 2007/08 (Table 2) and expenditures per user fell by more than three-quarters (77.3 percent) for metformins and by 71.1 percent for sulfonylureas (Table 3).

Discussion

From 2001/02 to 2007/08, total expenditures for prescription drugs purchased by Medicaid enrollees increased 47.4 percent, in real terms, from $28.6 to $42.1 billion. The spending increase resulted from a 15.5 percent increase, from 25.0 to 28.9 million, in the total number of Medicaid enrollees who used drugs and a 27.6 percent increase, from $1,142 to $1,456, in average annual expenditures per user. At the same time, however, the share of prescriptions for Medicaid enrollees dispensed as generics climbed from 45.4 to 60.0 percent suggesting that expenditure growth could have been higher had not so many drugs moved off patent. Elderly Medicaid enrollees filled 62.0 percent of prescriptions with generic drugs in 2007/08, which was a higher rate than any other group in our study, but slightly lower than the estimated 65 percent of prescriptions that were filled with generic drugs in the Medicare Part D program in 2007 (Congressional Budget Office, 2010). Children (46.2 percent) had the lowest rate of generic use

in our study. Although recent research suggests that Medicaid continues to underuse generic drugs, at least to some degree (Brill, 2011), we cannot determine whether the Medicaid rate of generic prescribing could be higher without additional research at the class and subclass level.

By 2007/08, the top five therapeutic classes ranked by total annual expenditures were psychotherapeutic drugs, cardiovascular drugs, CNS agents, respiratory agents and antidiabetic agents. The top five therapeutic subclasses in 2007/08 were antipsychotics, anticonvulsants, antihyperlipidemics, asthma controller medications and antidepressants. More than a third (35.8 percent) of the estimated $42.1 billion in Medicaid drug expenditures was attributable to these five subclasses, which had expenditures totaling $15.1 billion in 2007/08.

It is at the subclass level where we find substantial variation in expenditure growth rates. Drug subclasses including antipsychotics, antihypertensive combinations, ARBs, CNS stimulants, asthma controllers and insulin grew by more than 100 percent during the period of our study. With the exception of antihypertensive combinations, these subclasses all had low generic penetration (0.0 to 22.8 percent in 2007-08) along with substantial increases in expenditures per user of 42.5 to 132.2 percent (compared to 27.6 overall). Excepting insulin, these subclasses also all had large percentage increases in users ranging from 43.1 to 138.8 percent. In contrast to these rapidly growing subclasses, expenditures per user *fell* for 11 of the 19 subclasses examined in our study as the percentage of prescriptions dispensed as generics increased to a range of 44.5 to 94.2 percent. For most of the subclasses ─ CCBs, ACEIs, antihistamines, metformins and sulfonylureas ─ total expenditures also fell by 50.1 to 67.3 percent. In addition to generic entry, some of these older subclasses may face competition from newer drugs. For example, individuals may have switched from ACEIs to the newer ARBs which have similar long-term effects on cardiovascular outcomes (Sanders et al., 2011). Our

study also examines the contributions of four policy-relevant groups to overall trends in drug use and expenditures by Medicaid enrollees. The total noninstitutionalized Medicaid population grew by 22.2 percent, from 39.9 to 48.8 million during the period of our study. The population with drug use, however, increased by only 15.5 percent as the percentage of Medicaid enrollees using drugs declined 5.4 percent, driven primarily by a 9.7 percent decline among children. Children (the largest group) and nondisabled adults accounted for more than 70 percent of the total number of persons with prescription drug use but only about 30 percent of total expenditures. In contrast the elderly, who generally have multiple chronic conditions, and disabled adults, together, accounted for 30 percent of persons using drugs but more than 70 percent of drug expenditures in both periods. Disabled and elderly adults, who include most of the dually eligible, are disproportionately heavy users of drugs in the psychotherapeutic, cardiovascular, CNS, and antidiabetic classes, with expenditures per user for all prescribed drugs in 2007/08 more than seven times as high as the estimate for children and more than three times the estimate for nondisabled adults.

The MEPS provides a unique data source for this type of analysis and produces estimates that benchmark well with other data sources. We conducted a detailed comparison with a study that used Medicaid claims data from 2005, the last year in which dual eligibles received their drug benefit through Medicaid. We found that estimates from the 2005 MEPS were consistent with estimates that used 2005 Medicaid claims data across a broad range of measures (Centers for Medicare & Medicaid Services, 2009, 2010 & 2011). In spite of the strengths of MEPS for this type of analysis, our results should be interpreted in the context of several data limitations and qualifications. First, the MEPS does not include persons in nursing homes, long-term care facilities or other institutionalized settings. Second, the MEPS records all outpatient prescription

drug use by non-institutionalized Medicaid enrollees, but does not record drugs used in inpatient hospital settings or drugs, such as chemotherapy drugs and vaccines, that are administered directly by providers during office-based visits. Third, drug classification systems are not standardized, so it is difficult to make comprehensive comparisons across studies at the therapeutic class and subclass levels. Finally, as with all studies of Medicaid drug use and expenditures that we are aware of, we do not account for manufacturer rebates to Medicaid, which are confidential, but which can significantly reduce drug costs, especially for brand name drugs.

Medicaid programs' cost containment policies, along with changes in the patent status of drugs, may have worked to slow down increases in prescription drug expenditures by increasing the use of less expensive generic drugs. Yet, our analysis also reveals that continued and rapid up-take of new drugs and the expansions of eligibility for Medicaid under the Affordable Care Act are likely to pose continued challenges to policymakers concerned with containing drug expenditures in the future.

References

Aitken, M., Berndt, E. R., & Cutler, D. M. (2009, January–February). Prescription drug spending trends in the United States: looking beyond the turning point. *Health Affairs*, *28(1)*, Supplement: w151–160. PubMed doi: 10.1377/hlthaff.28.1.w151

Banthin, J. S., & Sing, M. (2005, January). *How Do MEPS Estimates of Medicaid Enrollment Compare to Administrative Data?* Internal Memo.

Banthin, J. S., & Miller, G. E. (2006, May). Trends in prescription drug expenditures by Medicaid enrollees. *Medical Care*, *44(5)*, Supplement: I27–35. PubMed

Brill, A. (2011). *Overspending for multi-source drugs in Medicaid*. American Enterprise Institute Policy Studies Working Paper 2011-01. Retrieved from http://www.aei.org/paper/100207

Bruen, B. K., & Miller, L. M. (2008, January). Changes in Medicaid prescription volume and use in the wake of Medicare Part D implementation. *Health Affairs*, *27(1)*, 196–202. PubMed doi: 10.1377/hlthaff.27.1.196

Centers for Medicare & Medicaid Services (2009). *Chartbook: Medicaid Pharmacy Benefit Use and Reimbursement in 2005*. Baltimore, MD. Retrieved from https://www.cms.gov/MedicaidDataSourcesGenInfo/downloads/Pharmacy_Rx_Chartbook_2005.pdf

Centers for Medicare & Medicaid Services (2010). *National Summary of Medicaid Managed Care Programs and Enrollment*. Baltimore, MD. Retrieved from https://www.cms.gov/MedicaidDataSourcesGenInfo/downloads/2010Trends.pdf

Centers for Medicare & Medicaid Services (2011). *Chartbook: Medicaid Pharmacy Benefit Use and Reimbursement in 2007*. Baltimore, MD. Retrieved from https://www.cms.gov/MedicaidDataSourcesGenInfo/downloads/Pharmacy_Rx_Chartbook_2007.pdf

Cohen, S. (2003, July). Design Strategies and Innovations in the Medical Expenditure Panel Survey. *Medical Care*, *41(7)*, Supplement: III-5–III-12. PubMed

Congressional Budget Office. (2010, September). *Effects of Using Generic Drugs on Medicare's Prescription Drug Spending*. Retrieved from www.cbo.gov/ftpdocs/118xx/doc11838/09-15-PrescriptionDrugs.pdf

Crystal, S., Akincigil, A., Walkup, J. T., & Bilder, S. (2007, October). Studying prescription drug use and outcomes with Medicaid claims data: strengths, limitations, and strategies. *Medical Care 45(10)*, Supplement 2: S58–65. PubMed doi: 10.1097/MLR.0b013e31805371bf

Farley, J. F., & Dusetzina, S. (2010, May). Medicaid prescription drug utilization and expenditures following Part D. *Journal of Health Care for the Poor & Underserved*, *21(2)*, 715–728. PubMed

Holahan, J., & Ghosh, A. (2005, January). Understanding the Recent Growth in Medicaid Spending, 2000–2003. *Health Affairs (Web Exclusive)*, Supplement: W5-52–W5-62. PubMed doi: 10.1377/hlthaff.w5.52

Kaiser Commission on Medicaid and the Uninsured (2004, June). *The "Clawback:" State Financing of Medicare Drug Coverage*. Washington, D.C. Retrieved from http://www.kff.org/medicaid/upload/The-Clawback-State-Financing-of-Medicare-Drug-Coverage.pdf

Kaiser Commission on Medicaid and the Uninsured (2004, October). *The Continuing Medicaid Budget Challenge: State Medicaid Spending Growth and Cost Containment in Fiscal Years 2004 and 2005*. Washington, D.C. Retrieved from http://www.kff.org/medicaid/upload/The-Continuing-Medicaid-Budget-Challenge-State-Medicaid-Spending-Growth-and-Cost-Containment-in-Fiscal-Years-2004-and-2005-Results-from-a-50-State-Survey.pdf

Kaiser Commission on Medicaid and the Uninsured (2005, October). *State Medicaid Outpatient Prescription Drug Policies: Findings from a National Survey*, 2005 Update. Washington, D.C. Retrieved from http://www.kff.org/medicaid/upload/state-medicaid-outpatient-prescription-drug-policies-findings-from-a-national-survey-2005-update-report.pdf

Kizer, J. R., & Kimmel, S. E. (2001, May). Epidemiologic review of the calcium channel blocker drugs. An up-to-date perspective on the proposed hazards. *Archives of Internal Medicine*, *161(9)*, 1145–1158. PubMed

Levit, K., Smith, C., Cowan, C., Sensenig, A., & Catlin, A. (2004). Health Spending Rebound Continues in 2002. *Health Affairs*, *23(1)*, 147–159. PubMed doi: 10.1377/hlthaff.23.1.147

Moeller, J. F., Stagnitti, M. N., Horan, E., Ward, K. N., & Hock, E. (2001, June). *Methodology Report #12: Outpatient Prescription Drugs: Data Collection and Editing in the 1996 Medical Expenditure Panel Survey (HC-010A)*. Agency for Healthcare Research and Quality, Rockville, MD. Retrieved from http://www.meps.ahrq.gov/data_files/publications/mr12/mr12.shtml

National Asthma Education and Prevention Program (2007, August). *Expert panel report 3: guidelines for the diagnosis and management of asthma*. National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health. Bethesda, MD. Retrieved from http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf

Office of the Inspector General (2011, August). *Higher Rebates for Brand-Name Drugs Result in Lower Costs for Medicaid Compared to Medicare Part D*. OEI-03-10-00320. Retrieved from http://oig.hhs.gov/oei/reports/oei-03-10-00320.asp

Sanders, G. D., Coeytaux, R., Dolor, R. J., Hasselblad, V., Patel, U. D., Powers, B., Yancy, W. S. Jr., Gray, R. N., Irvine, R. J., & Kendrick, A. (2011, June). *Angiotensin-Converting Enzyme Inhibitors (ACEIs), Angiotensin II Receptor Antagonists (ARBs), and Direct Renin Inhibitors for Treating Essential Hypertension: An Update*. Comparative Effectiveness Review No. 34. AHRQ Publication No. 11-EHC063-EF. Agency for Healthcare Research and Quality, Rockville, MD. Retrieved from http://www.effectivehealthcare.ahrq.gov/reports/final.cfm

Stagnitti, Marie N., Beauregard, Karen, and Solis, Amy, *Design, Methods, and Field Results of the Medical Expenditure Panel Survey Medical Provider Component (MEPS MPC)—2006 Calendar Year Data,* Methodology Report No. 23. November 2008. Agency for Healthcare Research and Quality, Rockville, MD. http://www.meps.ahrq.gov/mepsweb/data_files/publications/mr23/mr23.pdf

U.S. Food and Drug Administration (2010). *Approved Drug Products with Therapeutic Equivalence Evaluations*. Silver Spring, MD. Retrieved from http://www.fda.gov/ucm/groups/fdagov-public/@fdagov-drugs-gen/documents/document/ucm071436.pdf

U.S. Food & Drug Administration (2011). *Drugs@FDA: FDA Approved Drug Products*. Silver Spring, MD. Retrieved from http://www.accessdata.fda.gov/scripts/cder/drugsatfda/

U.S. Food & Drug Administration (2011). *CDER new and generic drug approvals: 1997-2008*.
Silver Spring, MD. Retrieved from
http://www.accessdata.fda.gov/scripts/cder/drugsatfda/index.cfm

Yin, W., Basu, A., Zhang, J. X., Rabbani, A., Meltzer, D. O., & Alexander, G. C. (2008,
February). The effect of the Medicare Part D prescription benefit on drug utilization and
expenditures. *Annals of Internal Medicine*, *148(3)*, 169–177 . PubMed

Zhang, J. X., Yin, W., Sun, S. X., & Alexander, G. C. (2008, October). The impact of the
Medicare Part D prescription benefit on generic drug use. *Journal of General Internal
Medicine*, *23(10)*, 1673–1678. PubMed doi: 10.1007/s11606-008-0742-6

Table 1.

TRENDS IN PRESCRIPTION DRUG USE AND EXPENDITURES (IN 2008 DOLLARS): NONINSTITUTIONALIZED MEDICAID POPULATION, 2001-2002 AND 2007-2008

	2001-2002		2007-2008		
	Estimate	SE	Estimate	SE	Percent Change
Full population					
Total population (thousands)	39,944	1,582.4	48,809*	1,349.6	22.2
Total population with use (thousands)	25,041	963.6	28,932*	775.9	15.5
Total expenditures (millions)	$28,597.6	1,516.9	$42,149.0*	2,935.2	47.4
Total prescriptions (millions)	429.3	21.2	581.7*	20.9	35.5
Percent generic	45.4%	0.7	60.0%*	0.6	32.2
Percent persons with use	62.7%	0.8	59.3%*	0.7	-5.4
Prescriptions per user	17.1	0.6	20.1*	0.6	17.3
Expenditures per user	$1,142	44.12	$1,456*	59.28	27.6
Children (ages 0-18)					
Total population (thousands)	22,643	963.5	28,006*	892.1	23.7
Total population with use (thousands)	11,582	520.2	12,940	473.0	11.7
Total expenditures (millions)	$3,713.6	426.4	$6,369.1*	1,008.1	71.5
Total prescriptions (millions)	62.1	4.5	77.0*	5.6	24.0
Percent generic	45.2%	1.4	52.3%*	1.2	15.7
Percent persons with use	51.2%	1.1	46.2%*	0.8	-9.7
Prescriptions per user	5.4	0.3	5.9	0.3	11.0
Expenditures per user	$321	33.04	$492*	74.11	53.5
Non-disabled adults (ages 19-64)					
Total population (thousands)	8,968	471.4	11,529*	487.6	28.6
Total population with use (thousands)	6,062	318.4	7,583*	299.7	25.1
Total expenditures (millions)	$4,958.9	437.7	$8,261.9*	635.1	66.6
Total prescriptions (millions)	75.8	5.2	119.4*	6.8	57.6
Percent generic	45.1%	1.4	60.3%*	1.3	33.7
Percent persons with use	67.6%	1.1	65.8%	1.4	-2.7
Prescriptions per user	12.5	0.6	15.7*	0.7	26.0
Expenditures per user	$818	63.31	$1,089*	73.99	33.2
Disabled adults (ages 19-64)					
Total population (thousands)	4,704	275.1	5,290	239.8	12.4
Total population with use (thousands)	4,157	241.0	4,795	223.6	15.4

Total expenditures (millions)	$12,375.2	943.1	$17,404.4*	1,165.6	40.6
Total prescriptions (millions)	167.2	11.4	216.8*	13.6	29.7
Percent generic	43.7%	1.1	61.0%*	1.0	39.7
Percent persons with use	88.4%	1.3	90.7%	1.1	2.6
Prescriptions per user	40.2	1.8	45.2	1.9	12.4
Expenditures per user	$2,977	132.84	$3,629*	183.26	21.9
Elderly (age 65 and older)					
Total population (thousands)	3,628	215.3	3,984	215.9	9.8
Total population with use (thousands)	3,239	192.2	3,612	201.6	11.5
Total expenditures (millions)	$7,549.9	575.6	$10,113.6*	728.2	34.0
Total prescriptions (millions)	124.2	10.3	168.6*	11.2	35.7
Percent generic	47.9%	1.4	62.0%*	1.2	29.5
Percent persons with use	89.3%	1.4	90.7%	1.2	1.6
Prescriptions per user	38.4	2.1	46.7*	1.8	21.6
Expenditures per user	$2,331	103.61	$2,800*	127.50	20.1

*The difference from the 2001-2002 estimate is significant at $\alpha = 0.05$.

Source: Estimates are based on the 2001-2002 and 2007-2008 Medical Expenditure Panel Survey (MEPS), Center for Financing, Access and Cost Trends, Agency for Healthcare Research and Quality.

Table 2.

TOTAL EXPENDITURES (IN 2008 DOLLARS) AND PERCENT GENERIC BY THERAPEUTIC CLASS AND SUBCLASS: FULL MEDICAID POPULATION, 2001-2002 AND 2007-2008

Therapeutic class, subclass	Total Expenditure (in Millions)				Percent Change	Percent Generic			
	2001-2002	SE	2007-2008	SE		2001-2002	SE	2007-2008	SE
Any drug	28,598.0	1,516.9	42,149.0*	1,935.2	47.4	45.4	0.6	60.0*	0.6
Psychotherapeutic	4,402.7	532.3	6,963.4*	496.4	58.2	28.2	1.5	48.6*	1.8
Antipsychotics	2,063.6	403.6	4,631.9*	450.0	124.5	19.3	3.6	22.8	2.5
Antidepressants	2,339.1	185.5	2,331.5	148.4	-0.3	31.6	1.7	61.6*	2.2
Cardiovascular	5,297.8	347.2	6,555.9	668.3	23.8	48.5	1.3	70.9*	1.0
Antihyperlipidemic	1,632.0	128.8	2,696.7*	179.3	65.2	6.5	1.2	44.5*	2.3
Antihypertensive combinations	307.4	38.9	654.4*	78.6	112.9	45.2	4.3	52.8	3.2
Beta blockers	509.3	55.9	625.0	64.8	22.7	71.6	2.9	83.4*	1.9
Angiotensin inhibitors	173.4	31.6	590.0*	67.0	240.3	0.0	0.0	0.0	0.0
Calcium channel blockers	1,093.2	102.8	481.2*	44.9	-56.0	40.1	3.3	85.4*	1.9
ACE inhibitors	841.3	66.2	321.8*	25.7	-61.8	27.1	2.8	94.2*	1.4
Central nervous system	3,203.8	260.0	6,148.2*	414.3	91.9	49.2	2.0	51.8	1.6
Anticonvulsants	1,877.9	202.3	3,074.4*	266.5	63.7	41.3	2.7	52.2*	2.5
CNS stimulants	356.4	47.0	1,513.1*	194.8	324.6	25.0	3.7	17.5	2.9
Sedatives	499.8	50.0	527.9	66.3	5.6	63.0	3.6	63.9	3.5
Muscle relaxants	344.3	46.0	239.0	28.6	-30.6	64.7	3.8	85.0*	2.5
Respiratory	2,727.2	194.2	3,902.2*	290.2	43.1	46.5	1.2	44.9	1.7
Asthma controllers	1,065.1	108.5	2,354.9*	187.8	121.1	15.6	3.0	6.0*	2.6
Asthma relievers	723.9	67.7	982.7*	91.7	35.8	67.7	2.7	46.4*	2.7
Antihistamines	655.5	47.0	327.2*	34.2	-50.1	29.8	2.6	75.9*	2.6
Antidiabetic	2,004.7	180.8	2,907.4*	258.3	45.0	21.9	2.0	47.3*	2.1
Insulin	595.2	72.0	1,255.5*	171.5	110.9	0.1	0.1	0.0	0.0
Thiazonlidinediones	487.6	91.5	877.7*	95.9	80.0	0.0	0.0	0.0	0.0
Metformins	485.7	60.2	213.0*	24.6	-56.2	23.1	3.1	93.3*	1.7
Sulfonylureas	368.3	50.0	120.6*	12.2	-67.3	59.8	4.0	86.5*	2.8

*The difference from the 2001-2002 estimate is significant at α = 0.05.

‡Insufficient sample, or relative standard error too large, to support a reliable estimate.

Source: Estimates are based on the 2001-2002 and 2007-2008 Medical Expenditure Panel Survey (MEPS), Center for Financing, Access and Cost Trends, Agency for Healthcare Research and Quality.

Table 3.

POPULATION WITH USE AND EXPENDITURE PER USER (IN 2008 DOLLARS) BY THERAPEUTIC CLASS AND SUBCLASS: FULL MEDICAID POPULATION, 2001-2002 AND 2007-2008

Therapeutic class, subclass	Population with Use (in Thousands)					Expenditure per User				
	2001-2002	SE	2007-2008	SE	Percent Change	2001-2002	SE	2007-2008	SE	Percent Change
Any drug	25,041.0	963.6	28,932.0*	775.9	15.5	1,142.0	44.1	1,456.8*	59.3	27.6
Psychotherapeutic	4,302.0	246.5	5,356.3*	215.5	24.5	1,023.4	88.5	1,300.0*	76.5	27.0
Antipsychotics	1,254.4	109.2	1,965.8*	125.1	56.7	1,645.1	235.0	2,356.3*	157.9	43.2
Antidepressants	3,686.1	224.6	4,490.9*	198.9	21.8	634.6	26.2	519.2*	26.9	-18.2
Cardiovascular	5,869.5	285.4	7,915.7*	286.0	34.9	902.6	33.7	828.2	77.3	-8.2
Antihyperlipidemic	1,872.2	125.6	3,974.9*	200.4	112.3	871.7	37.4	678.4*	30.4	-22.2
Antihypertensive combinations	853.8	76.7	1,493.0*	110.4	74.9	360.0	29.9	438.3	36.4	21.8
Beta blockers	1,652.4	120.2	2,701.9*	155.8	63.5	308.2	24.2	231.3*	19.2	-25.0
Angiotensin inhibitors	389.9	48.0	931.2*	81.9	138.8	444.7	50.3	633.6*	36.4	42.5
Calcium channel blockers	1,811.3	126.7	1,661.7	114.4	-8.3	603.5	31.4	289.6*	17.5	-52.0
ACE inhibitors	2,046.6	132.2	2,594.1*	140.5	26.8	411.1	17.2	124.1*	7.9	-69.8
Central nervous system	5,331.5	277.0	6,851.7*	257.3	28.5	600.9	33.2	897.3*	46.4	49.3
Anticonvulsants	2,497.5	170.7	3,329.8*	166.9	33.3	751.9	60.8	923.3	63.3	22.8
CNS stimulants	834.3	93.7	1,525.7*	120.9	82.9	427.1	28.1	991.8*	93.1	132.2
Sedatives	1,298.1	86.9	1,586.3*	118.2	22.2	385.0	29.1	332.8	33.0	-13.6
Muscle relaxants	1,256.4	106.8	1,436.4	103.6	14.3	274.0	26.3	166.4*	15.0	-39.3
Respiratory	9,699.4	431.5	9,191.9	334.6	-5.2	281.2	16.9	424.5*	26.7	51.0
Asthma controllers	1,909.4	154.0	2,732.2*	179.3	43.1	631.7	38.1	929.5*	48.4	47.2
Asthma relievers	3,015.8	159.5	3,570.3*	185.1	18.4	222.2	18.0	255.3	19.7	12.9
Antihistamines	3,820.7	203.6	3,261.7*	171.9	-14.6	171.6	9.5	100.3*	8.2	-41.5
Antidiabetic	1,968.1	130.5	2,815.2*	148.5	43.0	1,018.6	56.6	1,032.8	69.8	1.4
Insulin	827.8	78.6	988.0	80.7	19.4	719.0	53.2	1,270.7*	130.8	76.7
Thiazonlidinediones	395.7	57.1	658.0*	60.2	66.3	1,232.2	126.4	1,334.0	83.9	8.3
Metformins	684.7	62.2	1,320.0*	93.6	92.8	709.3	55.1	161.3*	14.2	-77.3
Sulfonylureas	931.3	82.9	1,054.7	85.6	13.3	395.5	38.7	114.3*	7.9	-71.1

* The difference from the 2001-2002 estimate is significant at $\alpha = 0.05$.

‡Insufficient sample, or relative standard error too large, to support a reliable estimate.

Source: Estimates are based on the 2001-2002 and 2007-2008 Medical Expenditure Panel Survey (MEPS), Center for Financing, Access and Cost Trends, Agency for Healthcare Research and Quality.

Table 4.

POPULATION WITH USE BY THERAPEUTIC CLASS AND SUBCLASS: CHILDREN AND NONDISABLED ADULTS IN THE MEDICAID POPULATION, 2001-2002 AND 2007-2008

Therapeutic class, subclass	Children (ages 0-18) Population with Use (in Thousands)					Nondisabled Adults (ages 19-64) Population with Use (in Thousands)				
	2001-2002	SE	2007-2008	SE	Percent Change	2001-2002	SE	2007-2008	SE	Percent Change
Any drug	11,582.0	520.2	12,940.0	473.0	11.7	6,062.2	318.4	7,583.5*	299.7	25.1
Psychotherapeutic	573.6	67.1	664.7	69.7	15.9	1,197.1	106.7	1,617.0*	118.0	35.1
Antipsychotics	‡		408.6	56.1	‡	‡		‡		‡
Antidepressants	434.1	56.9	‡		‡	1,124.7	101.1	1,431.7*	112.5	27.3
Cardiovascular	‡		‡		‡	958.5	77.0	1,811.4*	110.3	89.0
Antihyperlipidemic	‡		‡		‡	‡		767.0	71.7	‡
Antihypertensive combinations	‡		‡		‡	‡		359.0	46.5	‡
Beta blockers	‡		‡		‡	‡		446.5	55.3	‡
Angiotensin inhibitors			‡		‡	‡		‡		‡
Calcium channel blockers	‡		‡		‡	‡		‡		‡
ACE inhibitors	‡		‡		‡	320.2	41.5	607.3*	72.0	89.7
Central nervous system	1,129.8	117.0	1,616.5*	119.6	43.1	1,213.9	102.8	1,757.1*	125.1	44.8
Anticonvulsants	355.5	64.4	‡		‡	466.1	53.4	940.8*	88.7	101.9
CNS stimulants	760.4	87.1	1,219.2*	104.6	60.3	‡		‡		‡
Sedatives	‡		‡		‡	342.3	44.1	480.5	70.8	40.4
Muscle relaxants	‡		‡		‡	499.8	57.2	511.6	57.0	2.4
Respiratory	5,255.6	284.4	5,033.5	258.0	-4.2	1,833.0	132.5	1,725.1	119.3	-5.9
Asthma controllers	796.1	91.0	1,483.5*	131.8	86.3	283.2	48.4	336.9	50.5	19.0
Asthma relievers	1,708.3	119.5	2,013.7	132.7	17.9	462.3	54.1	560.9	66.0	21.3
Antihistamines	2,012.1	128.9	1,545.5*	105.5	-23.2	747.4	68.8	690.6	68.5	-7.6
Antidiabetic	‡		‡		‡	341.3	41.0	720.6*	67.4	111.2
Insulin	‡		‡		‡	‡		‡		‡
Thiazonlidinediones						‡		‡		‡
Metformins	‡		‡		‡	‡		447.8	52.5	‡
Sulfonylureas	‡		‡		‡	‡		‡		‡

*The difference from the 2001-2002 estimate is significant at α = 0.05.

‡Insufficient sample, or relative standard error too large, to support a reliable estimate.

Source: Estimates are based on the 2001-2002 and 2007-2008 Medical Expenditure Panel Survey (MEPS), Center for Financing, Access and Cost Trends, Agency for Healthcare Research and Quality.

Table 5.

POPULATION WITH USE BY THERAPEUTIC CLASS AND SUBCLASS: DISABLED AND ELDERLY IN THE MEDICAID
POPULATION, 2001-2002 AND 2007-2008

Therapeutic class, subclass	Disabled Adults (ages 19-64) Population with Use (in Thousands)					Elderly (age 65 and older) Population with Use (,000)				
	2001-2002	SE	2007-2008	SE	Percent Change	2001-2002	SE	2007-2008	SE	Percent Change
Any drug	4,157.4	241.0	4,795.4	223.6	15.4	3,238.9	192.2	3,612.5	201.6	11.5
Psychotherapeutic	1,897.8	133.3	2,206.4	140.6	16.3	633.5	72.3	868.2*	83.8	37.0*
Antipsychotics	734.6	80.5	969.1	92.2	31.9	93.4	22.0	188.5*	34.5	101.7*
Antidepressants	1,556.3	119.6	1,865.4	128.3	19.9	571.0	69.4	798.1*	81.0	39.8*
Cardiovascular	2,084.4	137.6	2,642.5*	156.8	26.8*	2,567.3	169.9	3,106.6*	182.3	21.0*
Antihyperlipidemic	828.4	78.7	1,469.6*	116.0	77.4*	798.9	80.4	1,733.7*	132.4	117.0*
Antihypertensive combinations	‡		464.1	55.7	‡	375.7	45.5	662.3*	72.6	76.3*
Beta blockers	638.4	68.2	970.0*	89.1	51.9*	694.4	77.4	1,269.4*	103.4	82.8*
Angiotensin inhibitors	‡		‡		‡	‡		556.9	63.2	‡
Calcium channel blockers	619.0	65.3	512.4	59.2	-17.2	942.9	90.9	842.8	80.2	-10.6
ACE inhibitors	759.1	77.9	897.7	79.3	18.3	948.2	86.8	1,060.3	86.7	11.8
Central nervous system	2,012.4	144.7	2,429.6*	147.2	20.7*	975.4	83.6	1,048.4	87.0	7.5
Anticonvulsants	1,201.0	105.3	1,482.9	109.3	23.5	475.0	58.3	533.7	61.3	12.4
CNS stimulants	‡		‡		‡	‡		‡		‡
Sedatives	513.6	51.4	770.6*	88.1	50.0*	390.6	50.4	313.3	45.8	-19.8
Muscle relaxants	552.7	68.1	712.2	75.2	28.9	‡		‡		‡
Respiratory	1,616.3	114.5	1,442.4	102.0	-10.8	994.5	82.7	991.0	87.5	-0.4
Asthma relievers	540.2	56.3	654.4	70.1	21.1	304.9	37.9	341.3	45.8	11.9
Asthma controllers	505.4	72.6	488.1	66.1	-3.4	324.6	49.0	423.7	66.4	30.5
Antihistamines	670.6	66.9	635.9	66.4	-5.2	390.5	51.7	389.6	53.4	-0.2
Antidiabetic	775.8	74.4	950.8	84.9	22.6	812.2	76.0	1,073.7*	95.6	32.2*
Isulin	361.2	46.5	‡		‡	‡		332.2	49.1	‡
Thiazonlidinediones	‡		‡		‡	‡		‡		‡
Metformins	326.0	42.8	454.8	57.0	39.5	‡		396.5	42.7	‡
Sulfonylureas	368.2	49.5	‡		‡	433.4	53.8	483.1	55.6	11.5

* The difference from the 2001-2002 estimate is significant at α = 0.05.

‡Insufficient sample, or relative standard error too large, to support a reliable estimate.

Source: Estimates are based on the 2001-2002 and 2007-2008 Medical Expenditure Panel Survey (MEPS), Center for Financing, Access and Cost Trends, Agency for Healthcare Research and Quality.