Chapter 7:
Prescription Drug Coverage in Patients with CKD

- In this 2017 Annual Data Report (ADR) we introduce two new chapter features:
    - To provide a more comprehensive examination of Medicare Part D enrollment patterns and spending under stand-alone prescription drug plans, we now compliment the Medicare 5% sample with information from the Optum Clinformatics™ DataMart for persons with Medicare Advantage and commercial managed care coverage.
    - Of the top 15 drug classes used by CKD patients, this year we specifically investigate geospatial, medication use patterns of the analgesic classes of nonsteroidal anti-inflammatory agents (NSAIDs) and opioids.
- Approximately 71.9% of chronic kidney disease (CKD) patients enrolled in Medicare Part D in 2015, including both the fee-for-service stand-alone and Medicare Advantage plans. The Part D enrollment rate for the CKD group was slightly higher than in the general Medicare population (67.1%; Figure 7.1).
- The percentage of Medicare beneficiaries who received the Low-income Subsidy (LIS) was higher for CKD patients across all age and race categories than in the general Medicare population (Figures 7.2 and 7.3).
- As compared to Whites (29.7%), much higher proportions of Asian (77.6%) and Black/ African American (64.2%) CKD Part D beneficiaries qualified for the LIS (Figure 7.3).
- For 2015 patients with stand-alone Part D plans, per patient per year (PPPY) spending on prescriptions was 1.5 times higher for Medicare patients with CKD than for general beneficiaries ($4,547 vs. $2,971). Spending for CKD patients with Medicare Advantage plans was 1.7 times higher ($2,914, vs. $1,760), and 4.5 times higher in those with managed care coverage ($4,398 vs. $971; Figure 7.5.a).
- Total PPPY Medicare spending for Part D-covered medications in 2015 was more than twice as high for CKD patients with the LIS ($8,145) than for those without ($2,658). Patient out-of-pocket costs for LIS patients represented only a 1.3-1.4% share of these total expenditures, as compared to 26.2-28.1% in each of the non-LIS populations (Figure 7.5.b).
- Prescriptions for lipid-lowering agents, antibacterials, renin-angiotensin-aldosterone system inhibitors, and β-adrenergic blocking agents (beta blockers) were each filled by more than 50% of Medicare CKD patients during 2015 (Table 7.6). CKD patients with Medicare Advantage and managed care coverage showed similar patterns of use for these drug classes.
- By drug class, the greatest medication expenditures for patients with CKD were for antidiabetic agents, followed by antineoplastic agents, antivirals, and lipid-lowering agents (Table 7.7).
- In the United States (U.S.), the overall proportion of CKD patients using prescription non-steroidal anti-inflammatory agents (NSAIDs) was 14.7%, and ranged from 19.6% in Alabama to 7.9% in North Dakota.
- Approximately 44.5% of Medicare CKD patients had at least one filled prescription for opioid agonists, ranging from 57.0% in Mississippi to 22.6% in Hawaii.

Introduction

Pharmaceutical therapy serves as a critical part of CKD treatment to control and reduce complications and delay disease progression. This chapter assesses prescription drug coverage, prescription drug-related costs, and patterns of prescription drug use for CKD patients in three health systems. In the 2016 ADR (USRDS, 2016), the Medicare 5% sample was used to describe Part D enrollment patterns in Medicare beneficiaries and Medicare Part D spending under stand-alone prescription drug plans (PDPs). For this year's chapter we have added information on prescription drug use and associated costs from the Optum Clinformatics™ DataMart (obtained from OptumInsight) for persons with Medicare Advantage and commercial managed care coverage.

In 2015, 45% of general Medicare beneficiaries enrolled in a stand-alone PDP, while 24% received coverage through a Medicare Advantage plan (Kaiser, 2017); adding information for Medicare Advantage beneficiaries thus makes our assessment of prescription drug use in CKD more complete. Additionally, Optum Clinformatics™ data for beneficiaries with managed care complements our report by providing insight into a younger and employed population.

In the 2016 ADR, we reported the cost and utilization rate of the top 15 drug classes used by CKD patients. Beginning this year, we will annually select a drug class to investigate medication use patterns in detail. Given that pain is a common symptom in CKD patients, we will begin with analgesics, particularly focusing on prescription nonsteroidal anti-inflammatory agents (NSAIDs) and opioid analgesics.

A parallel examination of prescription drug use and associated costs in patients with ESRD can be found in Volume 2, Chapter 10, *Prescription Drug Coverage in Patients with ESRD*.

Methods

In this chapter, we examine the Medicare 5% sample data to describe Part D enrollment and prescription utilization for Medicare beneficiaries. Enrollment data are available for both traditional Medicare (fee-for-service) enrollees and Medicare Advantage enrollees; however, actual claim data and spending data are only available for beneficiaries with traditional Medicare. Thus, our past estimations for Part D enrollment applied to all Medicare beneficiaries, but the reporting of prescription utilization and associated costs applied only to the sub-group of Medicare fee-for-services Part D enrollees. We have now introduced Optum Clinformatics™ data to augment our assessment of prescription utilization and associated costs for both the Medicare Advantage population and a commercially insured, managed care population.

Details of this data are described in the *Data Sources* section of the *CKD Analytical Methods* chapter. See the Chapter 7 section of *CKD Analytical Methods*, in the *CKD Analytical Methods* chapter for an explanation of the analytical methods used to generate the study cohorts, figures, and tables in this chapter. Microsoft Excel and PowerPoint files containing the data and graphics for these figures and tables are available to download from the *USRDS website*.

To be included in analyses specific to the Medicare 5% population, eligible beneficiaries must have been enrolled in traditional Medicare for all of the one-year entry period (year one, the calendar year before the year reported in the figures and tables), and be alive, without ESRD, and enrolled in Medicare on January 1 of the reported year (year two). These criteria were necessary to enable CKD identification, as diagnosis codes were not available for patients before they became eligible for fee-for-service Medicare. CKD patients were identified via having a minimum of one inpatient and/or two outpatient CKD diagnoses claims in year one. We assessed Part D enrollment and prescription utilization for year two. The Medicare Part D drug event file provided data to evaluate prescription utilization; it contains records of all prescriptions filled by the beneficiaries under Medicare Part D.

For beneficiaries selected from the Optum Clinformatics™ data, to create comparable results we applied the same eligibility algorithm as for the Medicare population. Beneficiaries were required to

be in the Optum Clinformatics™ dataset throughout year one, be alive, without ESRD, and covered by either a Medicare Advantage plan or a commercial managed care plan on January 1 of year two. Those with Medicare Advantage at the beginning of year two were classified as the Medicare Advantage population; otherwise, they were classified as the managed care population. All of beneficiaries in the Optum Clinformatics™ dataset had prescription drug coverage.

In this chapter, we define spending as plan payments. For example, Medicare Part D spending is the sum of Medicare net payment and the Low-income Supplement (LIS) amount. Patients' obligations are the sum of the deductible and copayment.

Medicare Part D Coverage Plans

The optional Medicare Part D prescription drug benefit has been available to all beneficiaries since 2006. Part D benefits can be managed through a stand-alone PDP or through a Medicare Advantage plan. Most Medicare Advantage plans offer prescription drug coverage (Medicare Advantage prescription drug plan, MA-PD). CKD patients have the option to enroll in a Medicare Advantage plan; end-stage renal disease (ESRD) patients, in contrast, are precluded from entering a Medicare Advantage plan if they are not already enrolled in one when they reach ESRD.

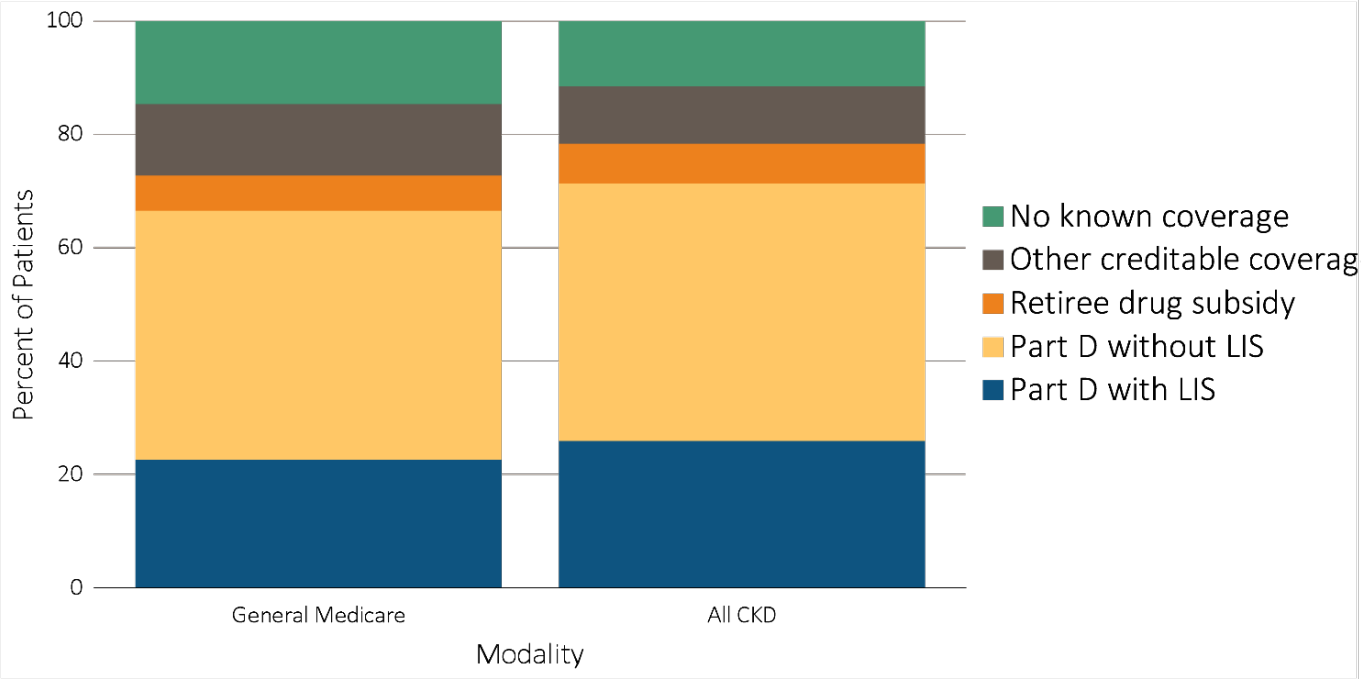
Before 2006, Medicare beneficiaries obtained drug coverage through various avenues—plans, state Medicaid programs, pharmaceutical assistance programs, or samples received from physicians. Those with none of these options paid for their medications out-of-pocket. Beneficiaries with low income who were dually enrolled in Medicare and Medicaid received prescription benefits under state Medicaid programs.

After 2006, the majority of Medicare enrollees obtained Part D coverage. The Part D program offers a substantial Low-income Subsidy (LIS) benefit to enrollees with limited assets and income, including those dually enrolled. The LIS provides full or partial waivers for many out-of-pocket cost-sharing requirements, including premiums, deductibles, and copayments, and provides full or partial coverage during the Part D coverage gap (commonly referred to as the "donut hole").

Besides Medicare Part D plans (PDP and MA-PD), Medicare beneficiaries can choose instead to obtain outpatient medication benefits through retiree drug subsidy plans or other creditable coverage such as employer group health plans, other private coverage, or Veterans Health Administration (VHA) benefits. Some enrollees remain uninsured and pay out-of-pocket for their outpatient prescription medications. The premiums for Part D coverage are partially subsidized. Beneficiaries who delay voluntary enrollment yet lack other creditable coverage at least equivalent to Part D pay higher premiums once they do enroll.

In 2015, approximately 71.9% of CKD patients enrolled in Medicare Part D (including both stand-alone and Medicare Advantage plans). This rate was slightly higher than Part D enrollment by those in the general Medicare population (67.1%, Figure 7.1). Compared to beneficiaries in the general population, a higher percentage of CKD patients qualified for the LIS (26.4% vs. 23.1%). The proportion of CKD patients with no known coverage was 11.0%, lower than the 14.1% of the general Medicare population who did not have coverage.

vol 1 Figure 7.1 Sources of prescription drug coverage in Medicare enrollees, by population, 2015



Data source: Medicare 5% sample. Point prevalent Medicare enrollees alive on January 1, 2015. Abbreviations: CKD, chronic kidney disease; LIS, Medicare Low-income Subsidy; Part D, Medicare prescription drug coverage benefit.

The proportion of beneficiaries that enrolled in Medicare Part D rose between 2011 and 2015, among both general Medicare beneficiaries and patients with CKD (Table 7.1). In each year, enrollment was slightly higher for those with CKD than in the general Medicare population.

vol 1 Table 7.1 General Medicare and CKD patients enrolled in Part D

	General Medicare (%)	All CKD (%)
2011	55.7	59.3
2012	57.6	60.5
2013	65.7	69.3
2014	66.3	71.1
2015	67.1	71.9

Data source: Medicare 5% sample. Point prevalent Medicare enrollees alive on January 1. Abbreviations: CKD, chronic kidney disease; Part D, Medicare prescription drug coverage benefit.

The Centers for Medicare and Medicaid Services (CMS) provide prescription drug plans (PDPs) with guidance on structuring a 'standard" Part D PDP. The upper portion of Table 7.2 shows the standard benefit design for PDPs in 2010 and 2015. In 2015, for example, beneficiaries shared costs with the PDP as co-insurance or copayments, until the combined total during the initial coverage period reached $2,960. After reaching this level, beneficiaries entered the coverage gap ("donut hole") where they paid 100% of prescription costs. Under the original Affordable Care Act, the coverage gap in the Part D benefit will be phased out by 2020.

As part of the phase-out, the government began providing non-LIS recipients reaching the coverage

gap with increasing assistance each year. In 2015, beneficiaries received a 50% discount on brand name drugs from manufacturers plus 5% coverage from their Part D plans; plans also paid 35% of generic drug costs in the gap. Beneficiaries who had paid yearly out-of-pocket drug costs of $4,700 reached the catastrophic coverage phase, in which they then had only a small copayment for their drugs until the end of the year.

PDPs have the latitude to structure their plans differently than the model presented here; companies offering non-standard plans must show that their coverage is at least actuarially equivalent to the standard plan. Many have developed plans with no deductibles or with drug copayments instead of the 25% co-insurance, and some plans provide generic and/or brand name drug coverage during the coverage gap.

Part D does not cover all medications prescribed to Medicare enrollees. Several drug categories—such as over-the-counter medications, anorexia and weight loss or gain medications, prescription vitamins (except for prenatal vitamins), and cough and cold medications are excluded from the Part D program formulary. This creates a lack of support for some drugs commonly prescribed to treat CKD, including oral iron, ergocalciferol, and cholecalciferol. In January 2013, Medicare expanded Part D coverage to include benzodiazepines without restriction, and barbiturates when prescribed for specific indications.

Medicare Part D Enrollment Patterns

Among both general Medicare beneficiaries and those with CKD, the percentage of beneficiaries enrolled in Part D generally declined with age. In the 75+ age group, similar proportions of general Medicare and CKD patients were enrolled in Part D, at 65.9% and 69.2% (Figure 7.2). The proportion of beneficiaries with LIS declined with age in both populations, with the exception of general Medicare population aged 75 and older. CKD patients in all age categories were more likely to receive this subsidy.

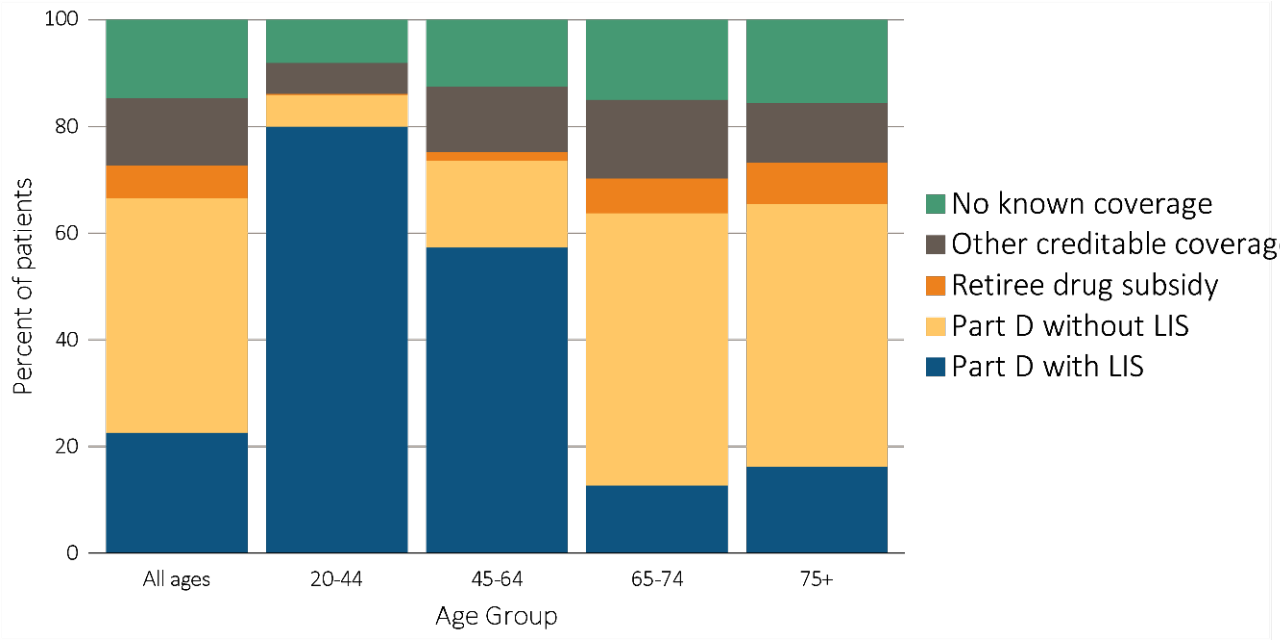
vol 1 Table 7.2 Medicare Part D parameters for defined standard benefit, 2010 & 2015

		2010	2015
Deductible		$310	$320
After the deductible is met, the beneficiary pays 25% of total prescription costs up to the initial coverage limit.			
Initial coverage limit		$2,830	$2,960
The coverage gap ("donut hole") begins at this point.			
The beneficiary pays 100% of their prescription costs up to the out-of-pocket threshold			
Out-of-pocket threshold		$4,550	$4,700
The total out-of-pocket costs including the "donut hole"			
Total covered Part D prescription out-of-pocket spending		$6,440.00	$6,680.00
Catastrophic coverage begins after this point (including the coverage gap).			
Catastrophic coverage benefit		$2.50	*$2.65
Generic/preferred multi-source drug		$6.30	*$6.60
Other drugs			plus a 55% brand-name medication discount
2015 Example:			
$320	(deductible)	$310.00	$320
+(($2960-$320)*25%)	(initial coverage)	$630.00	$660.00
+(($6680-$2960)*100%)	(coverage gap)	$3,610.00	$3,720.00
Total		$4,550.00	$4,700.00
(maximum out-of-pocket costs prior to catastrophic coverage, excluding plan premium)			

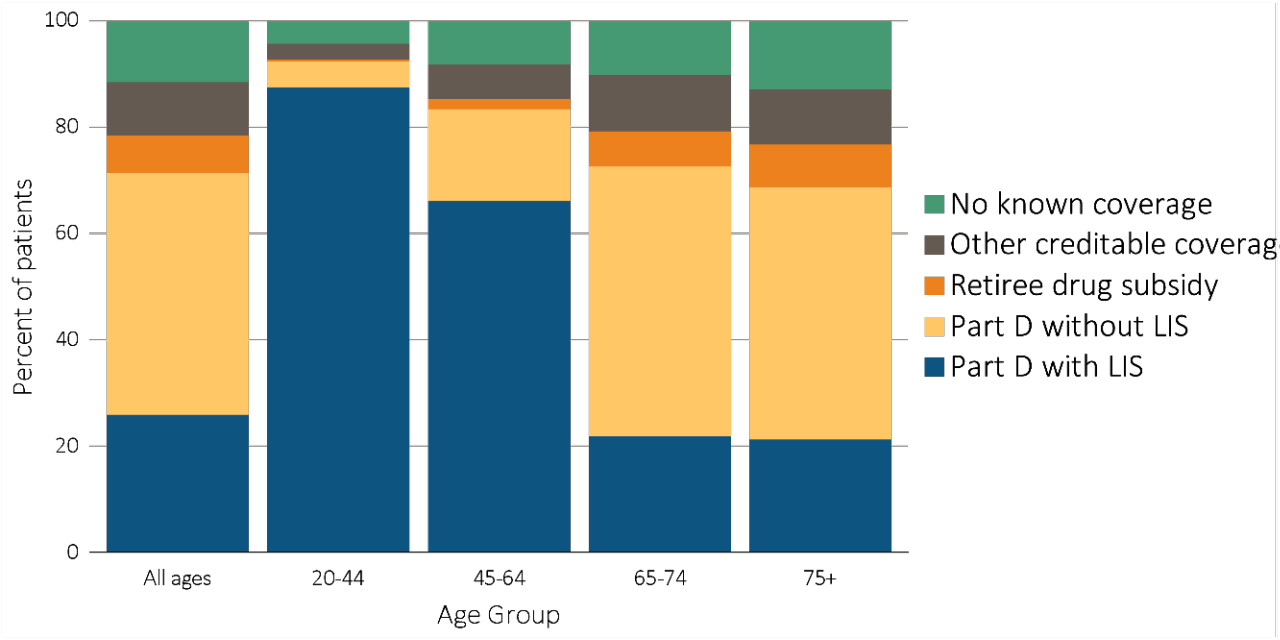
**The catastrophic coverage amount is the greater of 5% of medication cost or the values shown in the chart above. In 2015, beneficiaries were charged $2.65 for those generic or preferred multisource drugs with a retail price less than $53 and 5% for those with a retail price over $53. For brand name drugs, beneficiaries paid $6.6 for those drugs with a retail price less than $132 and 5% for those with a retail price over $132. Table adapted from http://www.q1medicare.com/PartD-The-2015-Medicare-Part-D-Outlook.php.*

vol 1 Figure 7.2 Sources of prescription drug coverage in Medicare enrollees, by age, 2015

(a) All general Medicare enrollees



(b) Enrollees with CKD

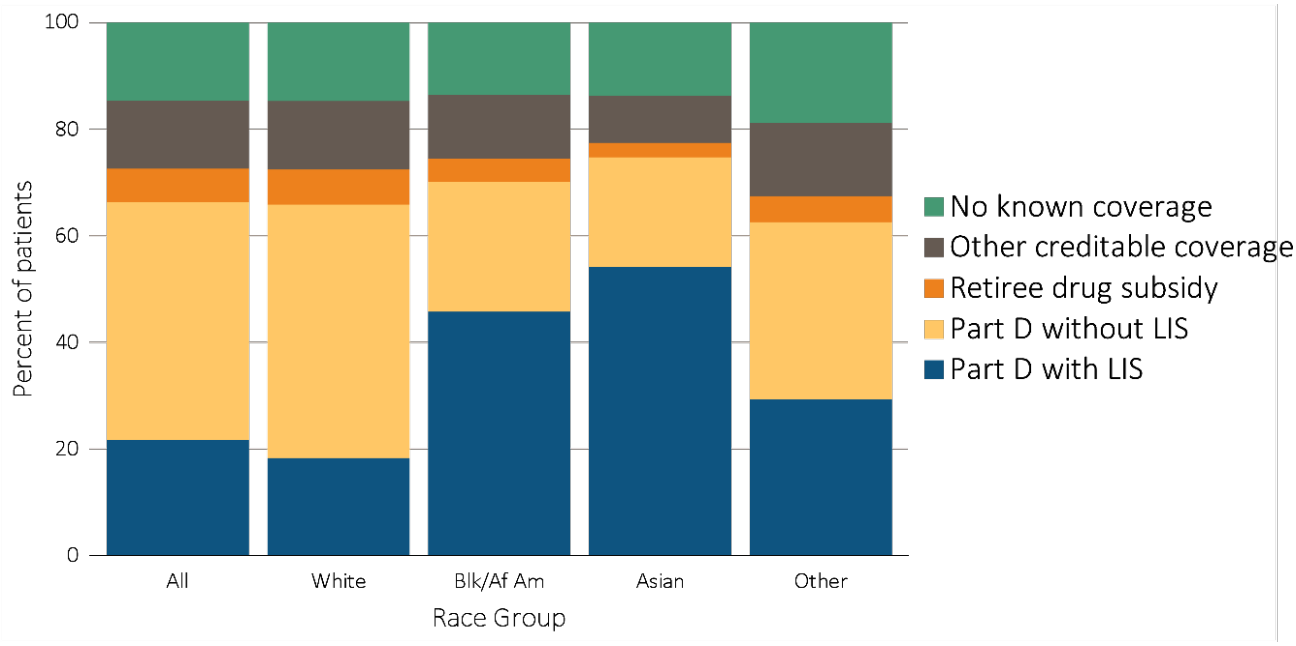


Data source: Medicare 5% sample. Point prevalent Medicare enrollees alive on January 1, 2015. Abbreviations: CKD, chronic kidney disease; LIS, Medicare Low-income Subsidy; Part D, Medicare prescription drug coverage benefit.

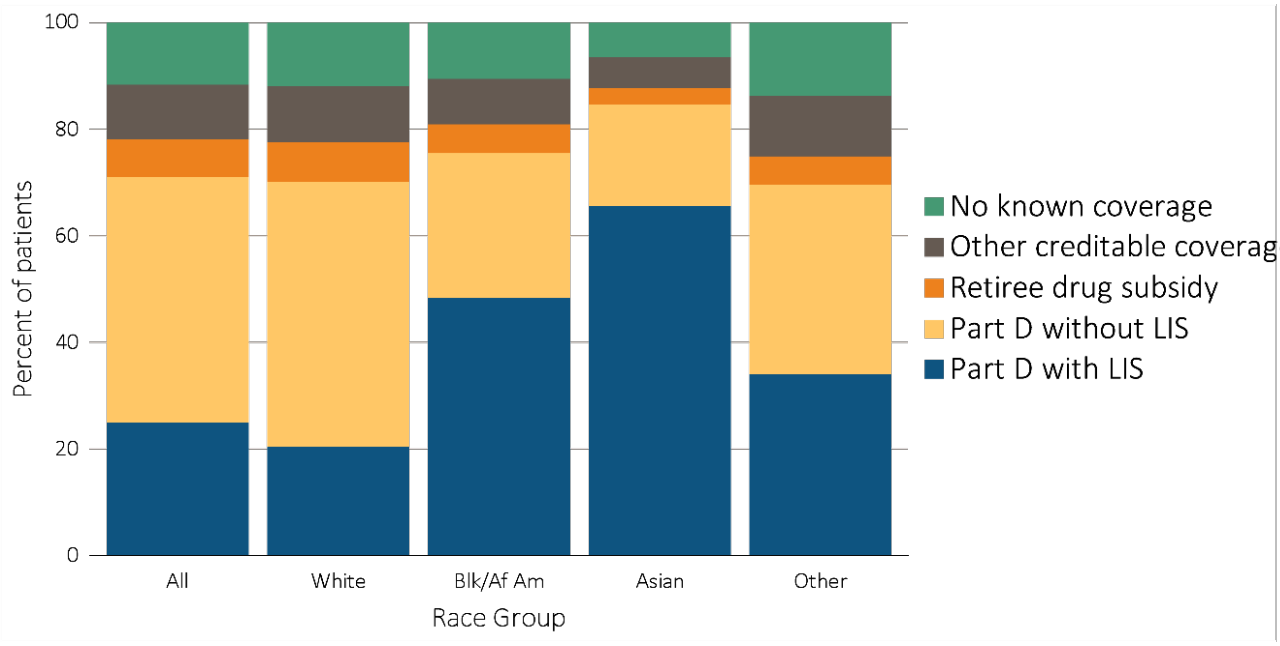
Patterns of coverage by race were similar for both general Medicare beneficiaries and for those with CKD (Figure 7.3). Among Medicare Part D enrollees with CKD, 77.6% of Asian beneficiaries received the LIS, compared to 64.2% of Blacks, and 29.7% of Whites. Across all races, the percentage of beneficiaries with the LIS was higher for CKD patients than their general Medicare counterparts.

vol 1 Figure 7.3 Sources of prescription drug coverage in Medicare enrollees, by race, 2015

(a) All general Medicare enrollees



(b) Enrollees with CKD



Data source: Medicare 5% sample. Point prevalent Medicare enrollees alive on January 1, 2015. Abbreviations: Blk/Af Am, Black/African American; CKD, chronic kidney disease; LIS, Medicare Low-income Subsidy; Part D, Medicare prescription drug coverage benefit.

vol 1 Table 7.3 Medicare Part D enrollees with the Low-income Subsidy, by age & race, 2015

	General Medicare (%)	All CKD (%)
	Part D with Low-income Subsidy	Part D with Low-income Subsidy
White		
All ages	28.3	29.7
20-44	92.5	94.4
45-64	75.5	76.6
65-74	15.9	24.4
75+	20.0	24.8
Black/African American		
All ages	65.5	64.2
20-44	95.0	95.6
45-64	85.3	85.0
65-74	46.5	54.4
75+	55.5	60.1
Asian		
All ages	72.6	77.6
20-44	92.7	100.0
45-64	84.2	84.3
65-74	63.6	71.7
75+	76.2	79.0
Other races		
All ages	47.2	49.2
20-44	93.4	88.2
45-64	79.5	79.3
65-74	31.4	38.9
75+	43.6	48.5

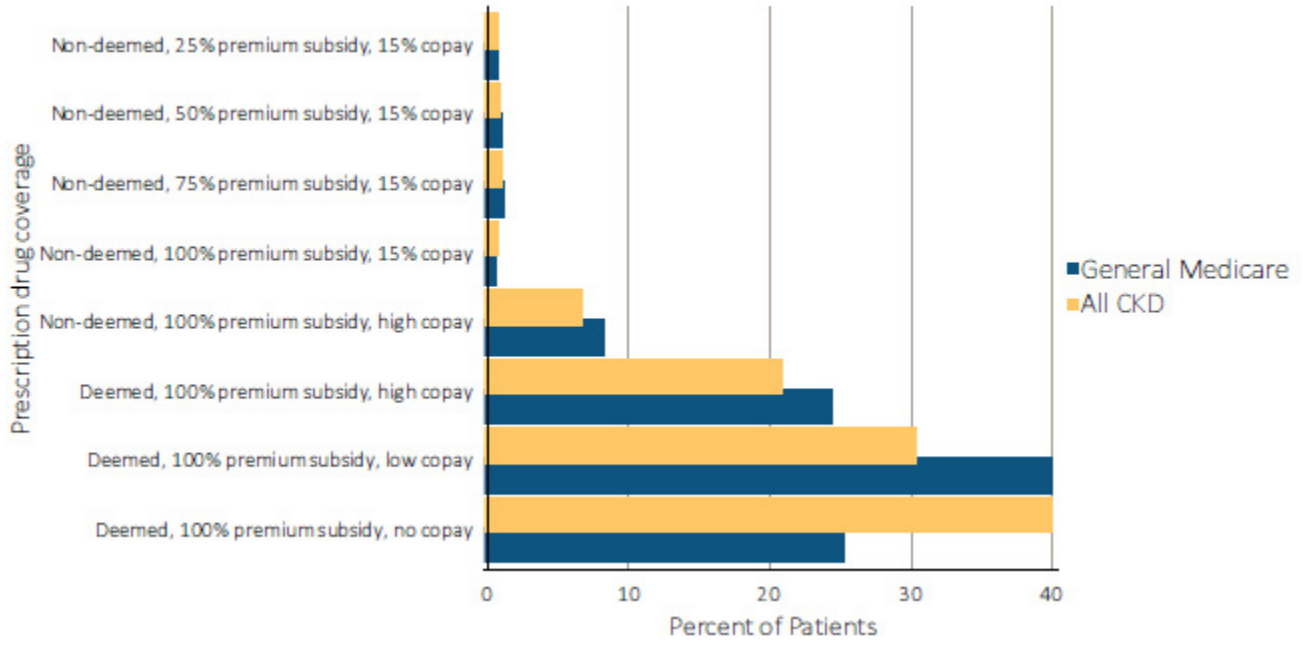
Data source: Medicare 5% sample. Point prevalent Medicare enrollees alive on January 1, 2015. Abbreviations: CKD, chronic kidney disease; Part D, Medicare prescription drug coverage benefit.

Table 7.3 reports the percentage of general Medicare and CKD enrollees who were eligible for the LIS, stratified by both age and race.

Several categories of Medicare beneficiaries automatically qualify for LIS and Part D benefits, and are considered to be 'deemed'. These individuals include full-benefit Medicare/Medicaid dual eligible individuals, partial dual eligible individuals, Qualified Medicare Beneficiaries (QMB-only), Specified Low-income Medicare Beneficiaries (SLMB-only), Qualifying Individuals (QI), and people who receive Supplemental Security Income (SSI) benefits but not Medicaid. Other Medicare beneficiaries with limited incomes and resources who do not automatically qualify for LIS (non-deemed) can apply for LIS and have their eligibility determined by their State Medicaid agency or the Social Security Administration.

Figure 7.4 illustrates the distribution of Part D enrollees receiving the LIS across the benefit categories of premium subsidy and copayment. The largest group of LIS recipients who had CKD was eligible for a full premium subsidy—20.6% had a high copay, 30.2% had a low copay, and 39.8% had no copay.

vol 1 Figure 7.4 Distribution of Low-income Subsidy categories in Part D general Medicare and CKD patients, 2015



Data source: Medicare 5% sample. Point prevalent Medicare enrollees alive on January 1, 2015. Abbreviations: CKD, chronic kidney disease; Part D, Medicare prescription drug coverage benefit.

Spending for Prescriptions

In 2015, total Medicare Part D spending for fee-for-service beneficiaries reached $54.2 billion. This figure represents the sum of the Medicare covered amount and the LIS amount. Spending for beneficiaries with CKD was $8.7 billion—about 16.1% of total Part D spending. Data over a five-year period shows a consistent trend of increasing costs; between 2011 and 2015 spending rose by 35.3% for general Medicare patients (14.1 billion) and 68.8% for Medicare CKD patients ($3.6 billion; Table 7.4). This increase mirrors increase of CKD ascertainment in the same period.

vol 1 Table 7.4 Total estimated Medicare Part D spending for fee-for-service beneficiaries (in billions), 2011-2015

	General Medicare	All CKD
2011	40.1	5.2
2012	35.7	4.8
2013	45.7	6.8
2014	50.5	7.7
2015	54.2	8.7

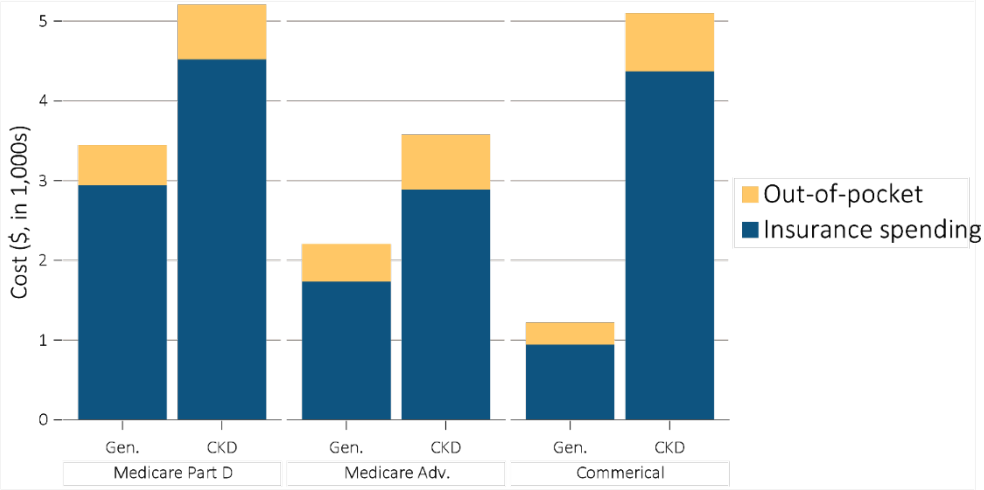
Data source: Medicare Part D claims. Medicare totals include Part D claims for Part D enrollees with traditional Medicare (Parts A & B). CKD totals include Medicare CKD patients, as determined from claims. Abbreviations: CKD, chronic kidney disease; Part D, Medicare prescription drug coverage benefit.

Figure 7.5.a illustrates PPPY spending and patient out-of-pocket costs by type of coverage. In 2015, PPPY spending for CKD beneficiaries was 1.5, 1.7, and 4.5 times higher than for general beneficiaries of the Medicare Part D, Medicare Advantage, and managed care cohorts. Similar to patterns of spending, out-of-pocket costs for CKD patients were 1.5, 1.5, and 3.0 times higher than for general populations with Medicare Part D, Medicare Advantage, and managed care coverage. Out-of-pocket costs represented a larger share of total spending in the CKD and general Medicare Advantage cohorts (19.3% and 17.9%) and the general managed care cohort (18.6%) than in the CKD (12.6%) and general Medicare Part D (13.0%) groups and the CKD managed care cohort (13.3%).

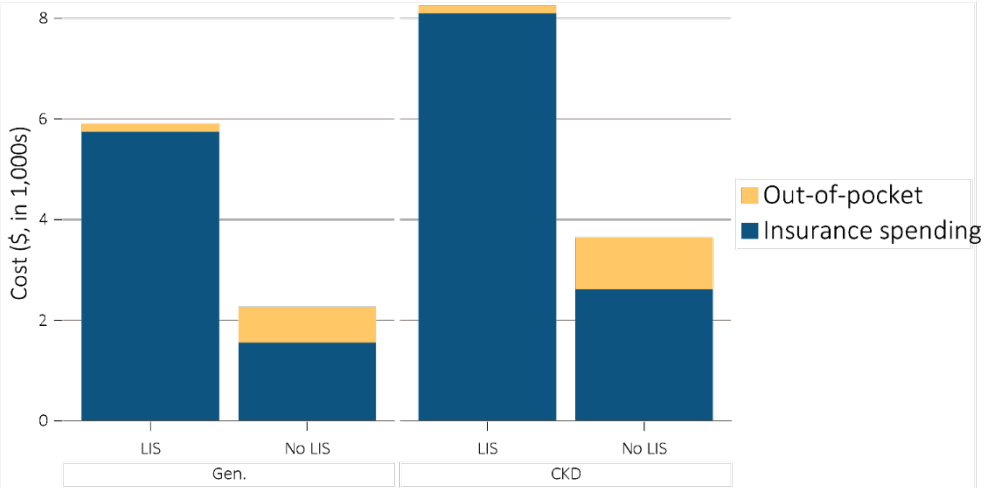
Per patient per year spending for general and CKD Medicare Part D enrollees was further stratified by their LIS status (Figure 7.5.b). Total 2015 spending for Part D-covered medications was more than twice as high for beneficiaries with the LIS than for those without, regardless the presence of CKD. In the LIS populations, however, out-of-pocket costs represented only 1.3-1.4% of these total expenditures, compared to 26.2-28.1% in each of the non-LIS populations.

vol 1 Figure 7.5 Per patient per year & out-of-pocket costs (in $1,000s) for enrollees, 2015

(a) All enrollees by type of insurance and modality



(b) Medicare Part D enrollees by Low-income Subsidy status



Data source: Medicare Part D claims and Optum Clinformatics™ claims. Medicare totals include Part D claims for Part D enrollees with traditional Medicare (Parts A & B). CKD totals include Medicare CKD patients as determined from claims. Costs are per person per year for calendar year 2015. Medicare total is the sum of Medicare net payment plus Low-income Supplement amount. Abbreviations: Gen., general enrollees; CKD, chronic kidney disease; Medicare adv., Medicare Advantage plans.

Total PPPY spending for prescriptions (excluding patient obligations) varied widely by coverage (Table 7.5). Overall, expenditures for beneficiaries with CKD were higher than in the general populations. Total PPPY prescription spending was highest in Medicare Part D beneficiaries with LIS for both the general and CKD populations ($5,788 and $8,145). For the general population cohorts spending was lowest in managed care ($971), and for the CKD cohorts was lowest in Medicare Part D without LIS ($2,658).

By race, PPPY spending was highest for Whites in populations covered by Medicare Part D with LIS and managed care, but highest for Blacks in populations covered by Medicare Advantage plans and the CKD population covered by Medicare Part D without LIS. In each of the populations, spending was highest in the age 45-64 category, except for populations covered by managed care and the CKD Medicare Advantage cohort.

As there are differences between the Medicare and Optum Clinformatics™ beneficiary populations and in their methods of reporting costs, however, these results should be interpreted in those contexts.

vol 1 Table 7.5 Per patient per year spending ($) for enrollees, 2015

	Medicare Part D with LIS, General	Medicare Part D with LIS, CKD	Medicare Part D without LIS, General	Medicare Part D without LIS, CKD	Medicare Advantage, General	Medicare Advantage, CKD	Managed care, General	Managed care, CKD
Age								
All	5,788	8,145	1,598	2,658	1,760	2,914	971	4,398
20-44	5,613	10,613	2,636	3,020	4,847	9,465	538	2,639
45-64	7,872	12,647	3,790	5,959	4,887	7,564	1,289	4,726
65-74	4,966	8,217	1,527	3,138	1,490	3,367	2,048	5,379
75+	4,146	5,802	1,450	2,212	1,348	2,206	2,725	3,824
Sex								
Male	5,877	8,816	1,749	2,891	1,740	2,828	945	4,651
Female	5,727	7,733	1,488	2,427	1,774	2,989	997	4,056
Race								
White	5,988	8,237	1,587	2,586	1,794	2,840	1,004	4,484
Black/African American	5,590	7,947	1,811	3,054	2,567	3,864	916	4,189
Asian	4,710	7,467	1,360	2,380	1,855	3,713	554	3,188
Other race	4,861	7,081	1,723	4,525	NA	NA	NA	NA

Data source: Medicare Part D claims and Optum Clinformatics™ claims. CKD determined from claims. Costs are per person per year for calendar year 2015. Medicare PPPY is the sum of Medicare net payment and the Low-income Supplement amount. LIS status is determined from the Part D enrollment. A person is classified as LIS if they are eligible for the LIS for at least one month during 2015. Abbreviations: CKD, chronic kidney disease; Part D, Medicare prescription drug coverage benefit.

Prescription Drug Classes

Ranking of the top 15 prescription drug classes used by CKD patients is based on the percentage of beneficiaries with at least one claim for a medication in that class during 2015. The proportion of patients using each drug class was somewhat lower for Medicare Advantage and managed care enrollees in the Optum Clinformatics™ database than for those having Medicare Part D. These differences could arise from plan effects such as coverage or care management activities, or from patient selection in the younger and healthier Optum Clinformatics™ cohort. The most commonly used drug classes were similar between the different cohorts. The list was led by lipid-lowering agents, antibacterials, renin-angiotensin-aldosterone system inhibitors, β-adrenergic blocking agents (Beta Blockers), analgesics, and antipyretics (Table 7.6).

vol 1 Table 7.6 Top 15 drug classes received by CKD cohorts in different health plans, by percent of patients, 2015

	Medicare Part D		Medicare Advantage		Managed Care	
Rank	**Drug class**	**%**	**Drug class**	**%**	**Drug class**	**%**
1	Lipid-lowering agents	63.6	Lipid-lowering agents	53.4	Renin-angiotensin-aldosterone system inhibitors	51.4
2	Antibacterials	60.5	Renin-angiotensin-aldosterone system inhibitors	51.1	Antibacterials	49.5
3	Renin-angiotensin-aldosterone system inhibitors	58.1	Antibacterials	44.8	Lipid-lowering agents	48.0
4	β-adrenergic blocking agents	56.0	β-adrenergic blocking agents	42.9	Analgesics and antipyretics	41.7
5	Analgesics and antipyretics	49.4	Analgesics and antipyretics	37.9	β-adrenergic blocking agents	33.4
6	Diuretics	48.5	Diuretics	36.2	Antidiabetic agents	32.8
7	Antiulcer agents and acid suppressants	42.4	Calcium-channel blocking agents	32.5	Calcium-channel blocking agents	26.8
8	Calcium-channel blocking agents	39.1	Antidiabetic agents	31.6	Diuretics	25.8
9	Antidiabetic agents	36.9	Antiulcer agents and acid suppressants	30.3	Psychotherapeutic agents	23.1
10	Psychotherapeutic agents	36.8	Psychotherapeutic agents	26.4	Diabetic consumables*	21.8
11	Antithrombotic agents	31.4	Diabetic consumables*	22.7	Antiulcer agents and acid suppressants	21.2
12	Anticonvulsants	26.0	Antithrombotic agents	21.8	Adrenals	18.8
13	Thyroid and antithyroid agents	25.8	Thyroid and antithyroid agents	19.8	Anxiolytics, sedatives, and hypnotics	18.2
14	Anxiolytics, sedatives, and hypnotics	24.2	Anticonvulsants	18.3	Anticonvulsants	15.1
15	Adrenals	21.9	Vaccines	17.4	Thyroid and antithyroid agents	14.8

Data source: Medicare Part D claims and Optum Clinformatics™ claims. CKD patients with Medicare Part D stand-alone prescription drug plans in the Medicare 5% sample. Diabetic Consumables refers to blood glucose test strips, blood glucose meters/sensors, lancets, needles, pen needles etc.

For the CKD Medicare Part D cohort, antidiabetic agents required the greatest spending, at 19.4% of the total for this group. For the Medicare Advantage and managed care cohorts, antidiabetic agents accounted for 17.7% and 21.9% of total spending. Other costly medications include antineoplastic agents, antivirals, and lipid-lowering agents.

For an examination of the prevalence of cardiovascular agent use in Medicare beneficiaries, see Volume 1, Chapter 4, *Cardiovascular Disease in Patients with CKD*. This chapter includes comparisons by cardiovascular comorbidities, procedures, and CKD status.

vol 1 Table 7.7 Top 15 drug classes received by different CKD cohorts (Medicare Part D/Medicare Advantage programs/managed care health plans), by spending, 2015

(a) Medicare Part D

Rank	Drug class	Spending ($ in millions)	Percent of total spending (%)
1	Antidiabetic agents	1,685.4	19.4
2	Antineoplastic agents	994.6	11.4
3	Antivirals	643.5	7.4
4	Lipid-lowering agents	437.5	5.0
5	Psychotherapeutic agents	386.7	4.4
6	Antithrombotic agents	283.2	3.3
7	Analgesics and antipyretics	262.3	3.0
8	Anti-inflammatory agents	255.0	2.9
9	Antiulcer agents and acid	246.8	2.8
10	Anticonvulsants	231.1	2.7
11	Disease-modifying antirheumatic agents	177.8	2.0
12	Anticholinergic agents	174.5	2.0
13	Antibacterials	154.0	1.8
14	Vasodilating agents (respiratory tract)	150.9	1.7
15	Central nervous system agents, miscellaneous	148.4	1.7

Table 7.7 continued on next page.

vol 1 Table 7.7 Top 15 drug classes received by different CKD cohorts (Medicare Part D/ Medicare Advantage programs/managed care health plans), by spending, 2015 (*continued*)

(b) Medicare Advantage

Rank	Drug class	Spending ($ in millions)	Percent of total spending
1	Antidiabetic agents	109.2	17.7
2	Antineoplastic agents	63.3	10.3
3	Lipid-lowering agents	46.7	7.6
4	Antivirals	32.9	5.3
5	Diabetes consumables*	30.1	4.9
6	Psychotherapeutic agents	23.8	3.9
7	Antithrombotic agents	23.0	3.7
8	Analgesics and antipyretics	18.8	3.0
9	Anti-inflammatory agents	18.7	3.0
10	Renin-angiotensin-aldosterone system inhibitors	15.9	2.6
11	Antiulcer agents and acid	15.3	2.5
12	Anticonvulsants	14.8	2.4
13	Anticholinergic agents	11.9	1.9
14	Calcium-channel blocking agents	10.0	1.6
15	β-adrenergic blocking agents	9.4	1.5

(c) Managed care

Rank	Drug class	Spending ($ in millions)	Percent of total spending
1	Antidiabetic agents	49.1	21.9
2	Antineoplastic agents	32.5	14.5
3	Antivirals	18.4	8.2
4	Lipid-lowering agents	13.4	6.0
5	Disease-modifying antirheumatic agents	8.7	3.9
6	Analgesics and antipyretics	7.9	3.5
7	Antithrombotic agents	6.8	3.1
8	Psychotherapeutic agents	6.5	2.9
9	Diabetic consumables*	6.2	2.8
10	Renin-angiotensin-aldosterone system inhibitors	4.3	1.9
11	Anti-inflammatory agents	3.7	1.6
12	Anticonvulsants	3.6	1.6
13	Antibacterials	3.3	1.5
14	Immunosuppressive agents	3.1	1.4
15	Immunomodulatory agents	2.8	1.3

Data source: Medicare Part D claims and Optum Clinformatics™ claims. CKD patients with Medicare Part D stand-alone prescription drug plans in the Medicare 5% sample. Medicare Part D spending represents the sum of the Medicare covered amount and the Low-income Subsidy amount. Diabetic Consumables refers to blood glucose test strips, blood glucose meters/sensors, lancets, needles, pen needles etc.

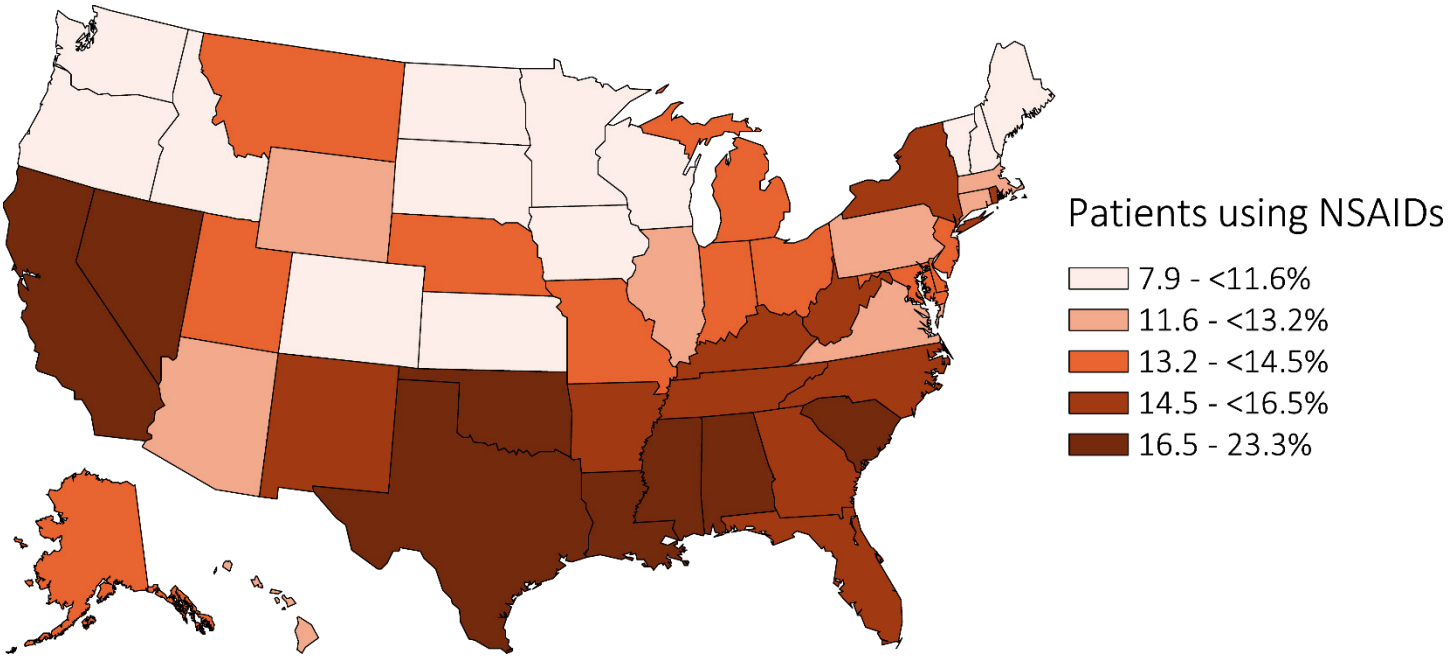
Medications for Pain Management

Non-steroidal anti-inflammatory drugs (NSAIDs) and opioid analgesics are two of the primary drug classes used for pain management. Figures 7.6 and 7.7 display the state-specific proportion of CKD Medicare Part D beneficiaries who were prescribed NSAIDs or opioid analgesics in 2015.

Nationally, 14.7% of these patients used prescription NSAIDs at some time during the year. The Southern region demonstrated the highest proportion of use, including Alabama, Mississippi, Louisiana, and Oklahoma. As NSAIDs are widely available over-the-counter, however, these findings likely underestimate the proportions of actual NSAID use.

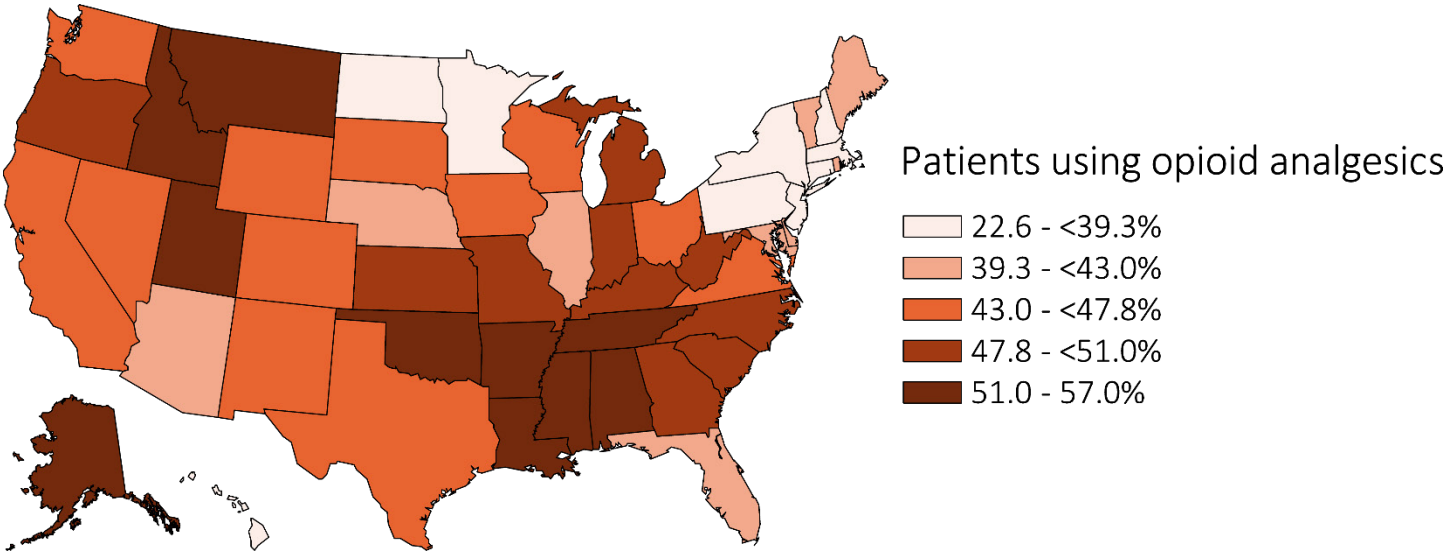
The national proportion of patients using opioid analgesics was higher, at 44.5%. Greatest by-state use occurred in the Mountain region (Montana, Idaho, and Utah) and the South Central region (Mississippi, Oklahoma, Arkansas, Alabama, Tennessee, and Louisiana). More than half of patients with CKD in these states had received opioid analgesics at some point in 2015. Medication use varies by CKD stage, so results may reflect differences in pain management strategies by state.

vol 1 Figure 7.6 Estimated utilization rate of prescription NSAIDs, by state, Medicare CKD Patients, 2015



Data source: Medicare Part D claims. CKD patients with Medicare Part D stand-alone prescription drug plans in the Medicare 5% sample. Abbreviations: NSAIDs, nonsteroidal anti-inflammatory agents. NSAIDs filled under Medicare Part D represent a fraction of actual NSAID use.

vol 1 Figure 7.7 Estimated utilization rate of opioid analgesics, by state, Medicare CKD Patients, 2015



Data source: Medicare Part D claims. CKD patients with Medicare Part D stand-alone prescription drug plans in the Medicare 5% sample.

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Notes