



Research Update

California Workers' Compensation Prescription Drug Utilization & Payment Distributions, 2009-2018: Part 1

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Background

Over the past two decades, public policymakers in California have enacted a series of workers' compensation reforms aimed at ensuring appropriate medical care for injured workers, while containing the rising cost of treatment. Among the changes that directly affected workers' compensation prescription drug utilization and payment trends are:

- the pharmacy fee schedule that took effect in 2004, and subsequent changes to the Medi-Cal Fee Schedule upon which the workers' compensation pharmacy fee schedule is based;
- the requirement that pharmacies substitute generics for brand drugs unless the physician specifies in writing that no substitution should be made;
- a mandate that workers' compensation medical care conform to evidence-based medicine standards in the Medical Treatment Utilization Schedule (MTUS) or nationally recognized, evidence-based treatment guidelines;
- the channeling of injured workers to Medical Provider Networks that set prescribing and dispensing rules for their providers and could contract with Pharmacy Benefit Networks that utilized their own formularies;
- mandatory utilization review (UR) and independent medical review (IMR);
- new rules on how repackaged drugs are reimbursed;
- new rules on how compounded drugs are reimbursed; and
- the adoption of the MTUS formulary that classifies some drugs as "exempt" from prospective UR and others as "non-exempt" drugs for which prospective UR is required. The formulary also established "special fill" and "perioperative fill" rules for a subset of non-exempt drugs, including several commonly used opioids and musculoskeletal drugs.

In the wake of these changes, there has been a shift in the mix of prescription drugs used to treat injured workers in California – with the most notable change being a sharp decline in the use of opioids, and the concurrent growth of anti-inflammatories, anticonvulsants, and other therapeutic drug groups that are often used as non-opioid alternatives for treating pain, a trend documented in prior research based on indemnity claim prescriptions filled through June 2017.¹ That study found that among claims with more than three days of lost time from work, opioids remained the number one workers' compensation therapeutic drug group in terms of both use and payments.

This report, based on prescriptions with fill dates through June 2018, builds on the prior research, providing a 10-year look at the prevalence and cost of prescription drugs used in all claims (medical-only and lost-time cases) by therapeutic group, including initial outcomes since the MTUS formulary took effect on January 1, 2018.

¹Young, B., Hayes, S. and Swedlow, A. California Workers' Compensation Prescription Drug Utilization and Opioid Trends, CWCI Research Update, March 2018.

Objective

The objective of this study is to identify utilization and payment trends for major therapeutic drug groups in California workers' compensation between 2009 and June 2018. The study identifies the following:

- the top 20 therapeutic drug groups in California workers' compensation in service year 2018 (based on percentage of all prescriptions dispensed through June) and the proportion of total workers' compensation prescriptions represented by those drug groups in each of the nine prior service years.
- the top 20 therapeutic drug groups (based on their percentage of 2018 total drug spend) and the proportion of total drug spend represented by those groups in each of the nine prior service years.
- the percentage of drugs within each of the top 20 therapeutic drug groups dispensed as generics rather than brand name drugs for service years 2009 to 2018.
- the average amount paid per script within each of the top 20 therapeutic groups for service years 2009 through 2018.

Data and Methods

For this analysis, the authors compiled a pharmaceutical data sample drawn from CWCI's Industry Research Information System (IRIS) database.² The study sample included data on 5.75 million prescriptions dispensed to injured workers between January 2009 and June 2018, with payments for the prescriptions totaling more than \$569 million. The dataset includes prescription data from both medical-only and indemnity claims.

After identifying the individual drugs in the sample according to their National Drug Code (NDC), the authors used Medi-Span's Master Drug Data Base³ to classify the drugs into therapeutic groups and to identify brand and/or generic versions of the drugs. Each prescription in the study sample was also grouped by service year based on the fill date. The service year data were used to measure the volume of prescription drugs dispensed in each of the 10 calendar years, which were then used to determine the distribution of prescriptions by therapeutic drug group; the distribution of the total drug spend for the 20 groups with the highest total drug spend; the proportion of generic drugs in each drug group; and the average prescription payment within each group.

Findings

Prescription Distributions by Therapeutic Drug Group

Exhibit 1 shows the top 20 therapeutic drug groups in the first half of service year 2018, and how the proportion of workers' compensation prescriptions accounted for by each of those groups has changed over the past decade. Among all claims, anti-inflammatories accounted for the largest percentage of prescriptions in each of the last four service years (2015, 2016, 2017, and 2018), while in each of the six years prior to that, opioids were the number one therapeutic drug category dispensed, and anti-inflammatories ranked second. A notable shift toward anti-inflammatories began in 2014, coinciding with an ongoing decline in opioids, which had dropped from 30.5 percent of the prescriptions filled in 2009 to 26.9 percent in 2014. The steady decline in opioids has continued over the past four years, as they fell to 18.0 percent of the 2018 prescriptions, for a relative decline of 41.0 percent over the 2009-2018 study period.

² IRIS is CWCI's proprietary database containing data on employee and employer characteristics, medical service data, benefits, and administrative costs on approximately 6.1 million California workers' compensation claims.

³ (MDDB®, Version 2.5 Documentation Manual, published by Wolters Kluwer Health).

The growth pattern for anticonvulsants was similar to that of anti-inflammatories. Anticonvulsants consistently accounted for 4.1 to 5.6 percent of the workers' compensation prescriptions from 2009 to 2014, after which their share increased steadily to 9.7 percent in 2018, which is also likely associated with the continued decline in opioids, since anticonvulsants, like anti-inflammatories, have become a popular alternative to opioids for treating pain.

Among the other major therapeutic drug groups, musculoskeletal drugs (muscle relaxants), ulcer drugs, corticosteroids, antianxiety drugs, and hypnotics/sedatives, have all accounted for a dwindling share of prescriptions dispensed to injured workers in recent years, with the prevalence of each of those drug categories hitting 10-year lows in the last two years. At the same time, other changes in the mix of therapeutic drug groups in workers' compensation have become evident, with antidepressants, nonnarcotic analgesics, and dermatological drugs⁴ all accounting for a greater share of workers' compensation prescriptions in 2018 than they did a decade ago.

The authors' 2018 analysis of indemnity claim prescriptions noted that with the declining prevalence of opioids and the increasing prevalence of these other therapeutic drug categories, the gap between opioids and several drug groups -- especially anti-inflammatories and anticonvulsants -- has narrowed considerably. The current analysis of all workers' compensation prescriptions shows that since anti-inflammatories overtook opioids as the most prevalent drug group in California workers' compensation in 2015, the spread between these two drug groups has continued to widen, with anti-inflammatories increasing to 31.7 percent of the prescriptions filled in 2018, while opioids declined to 18.0 percent.

Exhibit 1: Distribution of California Workers' Comp Prescriptions Top 20 Therapeutic Drug Groups* 2009 – 2018 Fill Dates

Therapeutic Groups	Percent of All Scripts										
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	09-18 % Diff
Anti-Inflammatory	21.4%	20.3%	19.9%	19.3%	19.0%	22.1%	25.3%	27.6%	29.4%	31.7%	48.1%
Opioid	30.5%	29.9%	29.4%	28.6%	28.2%	26.9%	24.4%	22.9%	20.2%	18.0%	-41.0%
Anticonvulsant	4.1%	4.8%	4.6%	4.8%	5.2%	5.6%	6.7%	7.8%	8.8%	9.7%	136.6%
Musculoskeletal	11.0%	10.1%	9.5%	9.5%	9.7%	10.0%	10.6%	10.6%	10.3%	7.3%	-33.6%
Antidepressant	3.9%	4.5%	4.8%	5.2%	5.4%	4.7%	5.0%	5.2%	5.5%	6.0%	53.8%
Ulcer	7.6%	7.6%	7.2%	7.8%	7.9%	7.8%	7.2%	6.4%	6.2%	5.8%	-23.7%
Dermatological	5.0%	5.6%	6.2%	5.9%	6.4%	6.0%	4.7%	4.8%	5.0%	5.6%	12.0%
Cephalosporin	1.5%	1.3%	1.1%	1.0%	1.0%	1.0%	1.2%	1.2%	1.2%	1.4%	-6.7%
Nonnarcotic Analgesic	0.8%	0.8%	0.8%	0.7%	0.7%	0.7%	0.8%	1.0%	1.1%	1.4%	75.0%
Ophthalmic	0.6%	0.5%	0.6%	0.6%	0.5%	0.6%	0.7%	0.8%	0.9%	1.1%	83.3%
Corticosteroid	1.6%	2.0%	1.7%	1.6%	1.5%	1.3%	1.4%	1.3%	1.2%	1.0%	-37.5%
Antianxiety	1.6%	1.6%	1.7%	1.9%	2.1%	1.6%	1.4%	1.1%	0.9%	1.0%	-37.5%
Hypnotics/Sedative	2.6%	2.6%	2.7%	2.8%	2.7%	2.1%	1.8%	1.3%	1.0%	0.8%	-69.2%
Laxative	0.4%	0.5%	0.8%	1.1%	1.1%	0.9%	0.9%	0.8%	0.6%	0.7%	75.0%
Toxoid	0.2%	0.3%	0.4%	0.4%	0.3%	0.4%	0.5%	0.6%	0.8%	0.7%	250.0%
Anti-Infective	0.4%	0.3%	0.4%	0.3%	0.3%	0.3%	0.4%	0.4%	0.4%	0.5%	25.0%
Antipsychotics/Antimanic	0.4%	0.5%	0.5%	0.5%	0.4%	0.4%	0.4%	0.4%	0.4%	0.5%	25.0%
Antihypertensive	0.3%	0.4%	0.5%	0.5%	0.6%	0.5%	0.5%	0.5%	0.4%	0.5%	66.7%
Antidiabetic	0.2%	0.3%	0.3%	0.4%	0.4%	0.3%	0.4%	0.3%	0.4%	0.5%	150.0%
Antiasthmatic & Bronchodilator	0.2%	0.2%	0.3%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.5%	150.0%
Top 20 Subtotal	94.3%	94.1%	93.4%	93.1%	93.7%	93.5%	94.6%	95.3%	95.0%	94.7%	0.04%

*Top 20 therapeutic group rankings based on 2018 volume.

⁴ The dermatological medications referenced in this report refer to prescription and/or private-label manufactured topicals, not compounded topicals.

Distribution of Total Drug Spend by Therapeutic Drug Group

Exhibit 2 ranks the top 20 therapeutic drug groups based on their share of the 2018 total drug spend and shows the shifting percentages of prescription dollars flowing toward each of these drug categories over the past decade. A decade ago opioids were the most costly drug group, accounting for nearly a quarter of all prescription dollars, or about 1-1/2 times the proportion noted for anti-inflammatories, which ranked second. At the same time, ulcer drugs (used to treat digestive issues often associated with opioid and NSAID use) ranked third, consuming almost one out of every six workers' compensation prescription dollars. However, with the steady decline in opioid use, as well as shifts in the types of opioids used, changes in average payments, and the growing use of generics, by 2018 opioid payments were down to 13.8 percent of the total drug spend -- a relative decline of 41.3 percent; and they ranked third among therapeutic drug groups in terms of total payments -- behind dermatological drugs and anticonvulsants, both of which registered significant increases in their share of the overall drug spend.

Exhibit 2: Distribution of California Workers' Comp Prescription Payments

Top 20 Therapeutic Drug Groups* 2009 – 2018 Fill Dates

Therapeutic Groups	Percent of Payments										09-18 Change
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Dermatological	10.1%	11.7%	12.3%	13.5%	15.7%	15.6%	13.2%	17.2%	17.4%	17.6%	74.3%
Anticonvulsant	4.8%	5.2%	4.8%	4.4%	4.6%	5.0%	6.7%	8.9%	11.7%	15.2%	216.7%
Opioid	23.5%	22.8%	22.5%	20.9%	20.7%	19.6%	19.0%	17.8%	15.1%	13.8%	-41.3%
Anti-Inflammatory	16.4%	15.1%	14.5%	15.6%	14.2%	17.1%	18.9%	16.8%	15.8%	12.9%	-21.3%
Ulcer	13.4%	13.5%	12.6%	12.2%	11.0%	9.9%	9.9%	6.4%	7.4%	5.3%	-60.4%
Musculoskeletal	9.0%	7.5%	6.0%	6.1%	7.1%	5.8%	6.8%	7.2%	7.2%	4.2%	-53.3%
Antidepressant	4.3%	4.5%	4.8%	5.2%	5.6%	4.2%	4.9%	4.4%	3.7%	3.5%	-18.6%
Hematological	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	2.0%	1.8%	3.4%	3300.0%
Neurological Agents (Misc.)	0.1%	0.2%	0.2%	0.3%	0.4%	0.4%	0.7%	1.3%	1.3%	2.3%	2200.0%
Antidiabetic	0.1%	0.2%	0.3%	0.3%	0.4%	0.5%	0.7%	1.1%	1.4%	2.0%	1900.0%
Cardiovascular	0.3%	0.4%	0.4%	0.5%	0.6%	0.6%	0.7%	1.0%	1.2%	1.9%	533.3%
Antiviral	0.2%	0.2%	0.3%	0.3%	0.2%	0.5%	0.4%	0.9%	1.4%	1.7%	750.0%
Antiasthmatic & Bronchodilator	0.4%	0.4%	0.4%	0.4%	0.5%	0.4%	0.6%	0.7%	1.1%	1.6%	300.0%
Anticoagulant	0.4%	0.4%	0.4%	0.3%	0.4%	0.3%	0.4%	0.8%	1.0%	1.6%	300.0%
Antipsychotics/Antimanic	1.1%	1.4%	1.7%	1.6%	1.7%	1.5%	1.6%	1.6%	1.3%	1.3%	18.2%
Endocrine & Metabolic	<0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	0.2%	0.8%	1.3%	12900.0%
Gastrointestinal	0.1%	0.2%	0.2%	0.2%	0.3%	0.3%	0.5%	1.0%	1.2%	1.2%	1100.0%
Ophthalmic	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.4%	0.6%	0.8%	1.1%	266.7%
Antifungal	0.1%	0.3%	0.3%	0.2%	0.4%	0.2%	0.4%	0.8%	0.6%	0.7%	600.0%
Hypnotics/Sedative	2.1%	2.0%	1.8%	1.7%	1.5%	1.1%	1.2%	0.8%	0.6%	0.6%	-71.4%
Top 20 Subtotal	86.8%	86.5%	84.0%	84.2%	85.8%	83.5%	87.6%	91.5%	92.8%	93.2%	7.4%

*Top 20 therapeutic group rankings based on payments for prescriptions filled in 2018.

Among the top 5 drug groups in terms of total 2018 payments, anticonvulsants have seen the most significant growth over the past 10 years, as their share of the total drug spend more than tripled from 4.8 percent in 2009 to 15.2 percent in 2018. Nearly all of that growth, however, has been in the past four years; anticonvulsants' share of the workers' compensation drug spend showed little change from 2009 to 2014, then began to trend up in 2015 as opioids continued to consume a smaller and smaller percentage of prescription payments.

Dermatological medications, which include high-cost topical creams and patches used for pain management, have also represented an increasing percentage of the prescription dollars over the past decade. Unlike anticonvulsants, however, the growth in dermatological payments has been fairly steady, with the only significant decline occurring

between 2014 and 2015. Although dermatological prescriptions only increased from 5.0 percent of all prescriptions in 2009 to 5.6 percent in 2018, over that same period their share of the total drug spend climbed from 10.1 percent to 17.6 percent (a relative increase of 74.3 percent), indicating an increase in the average amount paid for dermatological prescriptions, which in 2017 surpassed opioids as the most costly drug group in California worker's compensation.

The growth patterns noted in this study for both dermatological and anticonvulsant payments are similar to those documented in the Institute's 2018 study of prescription drug payments on indemnity claims. The results of that study showed that, in 2017, payments for dermatological drugs had increased to a record 16.1 percent of the total drug spend for indemnity claims, while payments for anticonvulsants rose to a record 11.8 percent, and that both of these drug groups had surpassed anti-inflammatories, which fell to 9.8 percent of the indemnity claim drug spend – the lowest level in the 10-year study period. The changes in the mix of prescription drug payments noted in the Institute's 2018 indemnity claim analysis were similar to those found in the current analysis of all claims: opioids, NSAIDs, ulcer drugs, musculoskeletal drugs, antidepressants, and hypnotics/sedatives all accounted for a significantly smaller share of workers' compensation prescription drug payments over the past decade, while dermatological drugs, anticonvulsants, antidiabetics, cardiovascular medications, and the rest of the therapeutic drug groups listed in Exhibit 2 all registered relatively sharp increases in their share of payments.

Exhibit 2 also shows that several therapeutic drug groups that barely registered in the payment rankings a decade ago are now among the most costly drug categories in workers' compensation. The top 10 therapeutic drug groups based on 2018 payments include hematological drugs (used to treat conditions such as bleeding, anemia, and malignancies), which increased from 0.1 percent of the drug spend in 2009 to 3.3 percent in 2018; miscellaneous neurological agents, which increased from 0.1 percent to 2.3 percent of the prescription payments; and antidiabetic medications, which went from 0.1 percent to 2.0 percent of the total drug spend. Among the factors that can lead to such increases are introduction of new medications or therapies (including off-label use of drugs), increased treatment of comorbid conditions, as well as the treatment of side effects of other medications.

Generic Prescription Trends

In 2002, state lawmakers enacted the first of several reforms designed to modify the delivery of pharmacy benefits in workers' compensation and rein in prescription drug costs. Among those reforms was a requirement that pharmacies (but not doctors' offices, clinics, or hospitals) substitute generics for brand drugs unless the physician specifies in writing that no substitution should be made. As a result, among drug groups where they are widely available, generics tend to account for the vast majority of the prescriptions dispensed to injured workers. Exhibit 3 displays the percentage of drugs in each of the top 20 therapeutic drug groups that were dispensed as generics rather than brand name drugs during service years 2009 to 2018, as well as the relative change in the generic utilization rate in each of those groups over the 10-year study period.

Exhibit 3: Generic Drugs as a Percent of California Workers' Comp Prescriptions Top 20 Therapeutic Drug Groups, 2009 – 2018 Fill Dates

Therapeutic Groups	% Generics										09-18 Change
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Anti-Inflammatory	88.0%	88.0%	86.0%	85.0%	87.0%	86.0%	91.0%	88.0%	85.0%	87.0%	-1.1%
Opioid	91.0%	92.0%	92.0%	93.0%	93.0%	93.0%	94.0%	95.0%	96.0%	95.0%	4.4%
Anticonvulsant	87.0%	90.0%	92.0%	94.0%	95.0%	96.0%	97.0%	97.0%	97.0%	98.0%	12.6%
Musculoskeletal	72.0%	74.0%	75.0%	77.0%	78.0%	78.0%	80.0%	82.0%	82.0%	82.0%	13.9%
Antidepressant	89.0%	94.0%	95.0%	95.0%	94.0%	94.0%	96.0%	96.0%	97.0%	97.0%	9.0%
Ulcer	63.0%	69.0%	69.0%	72.0%	73.0%	93.0%	94.0%	94.0%	96.0%	97.0%	54.0%
Dermatological	21.0%	14.0%	13.0%	13.0%	14.0%	29.0%	38.0%	51.0%	64.0%	73.0%	247.6%
Cephalosporin	95.0%	93.0%	94.0%	94.0%	97.0%	98.0%	98.0%	98.0%	99.0%	99.0%	4.2%
Nonnarcotic Analgesic	52.0%	58.0%	51.0%	50.0%	47.0%	52.0%	59.0%	65.0%	80.0%	75.0%	44.2%
Ophthalmic	60.0%	57.0%	53.0%	55.0%	47.0%	40.0%	28.0%	19.0%	14.0%	22.0%	-63.3%
Corticosteroid	69.0%	74.0%	83.0%	84.0%	85.0%	92.0%	94.0%	94.0%	93.0%	90.0%	30.4%
Antianxiety	95.0%	96.0%	96.0%	98.0%	98.0%	98.0%	99.0%	100.0%	100.0%	100.0%	5.3%
Hypnotics/Sedative	59.0%	60.0%	61.0%	59.0%	58.0%	63.0%	65.0%	66.0%	71.0%	73.0%	23.7%
Laxative	54.0%	32.0%	23.0%	20.0%	24.0%	21.0%	18.0%	20.0%	16.0%	20.0%	-63.0%
Toxoid	32.0%	35.0%	24.0%	20.0%	19.0%	23.0%	24.0%	29.0%	39.0%	41.0%	28.1%
Anti-Infective	72.0%	82.0%	85.0%	91.0%	90.0%	90.0%	91.0%	93.0%	97.0%	98.0%	36.1%
Antipsychotics/Antimanic	88.0%	89.0%	85.0%	83.0%	88.0%	95.0%	96.0%	97.0%	99.0%	97.0%	10.2%
Antihypertensive	37.0%	47.0%	42.0%	53.0%	53.0%	51.0%	67.0%	74.0%	87.0%	86.0%	132.4%
Antidiabetic	72.0%	69.0%	68.0%	71.0%	65.0%	59.0%	53.0%	52.0%	47.0%	46.0%	-36.1%
Antiasthmatic & Bronchodilator	8.0%	8.0%	8.0%	13.0%	21.0%	23.0%	27.0%	28.0%	24.0%	21.0%	162.5%

Among the top 20 therapeutic drug groups with the highest California workers' compensation prescription volume in 2018, 12 had a generic utilization rate of at least 80 percent, and eight of those had a generic utilization rate of 90 percent or above. On the flip side, the drug groups with the lowest generic utilization rate included categories with a high concentration of single-source patented brand drugs such as toxoids (41 percent) and antidiabetic medications (46 percent); as well as drug groups that include a wide array of inexpensive brand drugs, such as laxatives (20 percent) and nonnarcotic analgesics (75 percent). Generic utilization within a drug group can increase if a patent on a heavily utilized brand drug within that group expires and generic versions become available. Over the 10-year study period, the therapeutic drug groups with the biggest increases in generic utilization have been dermatological drugs, where the generic utilization rate more than tripled from 21 percent in 2009 to 73 percent in 2018; antihypertensive drugs where the use of generics more than doubled from 37 percent to 86 percent of the workers' compensation fills; and antiasthmatics and bronchodilators, where generics increased from 8 percent to 21 percent.

Average Payment Trends

Average amounts paid for prescriptions within each of the therapeutic drug groups reflect a number of factors, including the mix of drugs and the amounts allowed under the fee schedule for those medications; the distribution of brand versus generic drugs; and the dose, form, and quantity of drugs for the prescribed medications within that group. Exhibit 4 shows the average amounts paid per prescription for drugs in each of the top 20 therapeutic groups for each service year, and the relative change in the average paid per prescription for each of those groups over the 10-year study period.

While anti-inflammatories are now the most prevalent therapeutic drug group in California workers' compensation, the average amount paid for an anti-inflammatory prescription is a relatively low \$33; and since peaking in 2014, average payments for anti-inflammatories have dropped steadily, falling nearly 65 percent in the past four years. The payment trend was similar for opioids, where average reimbursements climbed from \$66 in 2009 to a peak of \$88 in 2014, then dropped steadily over the past four years, falling 31 percent to a 10-year low of \$61 in 2018.

Exhibit 4: Average Payment per California Workers' Comp Prescription Top 20 Therapeutic Drug Groups, Service Years 2009 – 2018

Therapeutic Groups	Average Cost/Script										09-18 Change
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Anti-Inflammatory	\$65	\$64	\$67	\$83	\$83	\$93	\$82	\$55	\$44	\$33	-49.2%
Opioid	\$66	\$66	\$71	\$76	\$82	\$88	\$86	\$70	\$62	\$61	-7.6%
Anticonvulsant	\$99	\$93	\$95	\$93	\$99	\$108	\$111	\$102	\$109	\$125	26.3%
Musculoskeletal	\$70	\$64	\$58	\$66	\$81	\$70	\$70	\$61	\$58	\$45	-35.7%
Antidepressant	\$94	\$87	\$92	\$103	\$116	\$107	\$107	\$75	\$56	\$47	-50.0%
Ulcer	\$152	\$154	\$161	\$161	\$155	\$154	\$152	\$90	\$98	\$73	-52.0%
Dermatological	\$171	\$182	\$184	\$238	\$274	\$315	\$311	\$322	\$288	\$251	46.8%
Cephalosporin	\$49	\$46	\$44	\$45	\$40	\$33	\$33	\$33	\$34	\$26	-46.9%
Nonnarcotic Analgesic	\$27	\$27	\$30	\$25	\$21	\$26	\$22	\$17	\$14	\$16	-40.7%
Ophthalmic	\$42	\$46	\$49	\$55	\$58	\$61	\$69	\$75	\$75	\$80	90.5%
Corticosteroid	\$17	\$20	\$19	\$26	\$22	\$29	\$30	\$27	\$24	\$23	35.3%
Antianxiety	\$32	\$28	\$29	\$24	\$24	\$21	\$20	\$15	\$14	\$14	-56.3%
Hypnotics/Sedative	\$70	\$66	\$62	\$62	\$61	\$63	\$78	\$59	\$51	\$61	-12.9%
Laxative	\$19	\$20	\$29	\$36	\$34	\$29	\$23	\$23	\$24	\$24	26.3%
Toxoid	\$37	\$53	\$59	\$59	\$59	\$45	\$45	\$44	\$47	\$42	13.5%
Anti-Infective	\$224	\$146	\$161	\$203	\$125	\$104	\$84	\$71	\$46	\$29	-87.1%
Antipsychotics/Antimanic	\$255	\$257	\$308	\$360	\$427	\$471	\$493	\$396	\$260	\$214	-16.1%
Antihypertensive	\$68	\$50	\$51	\$45	\$48	\$57	\$53	\$41	\$36	\$26	-61.8%
Antidiabetic	\$64	\$73	\$76	\$87	\$121	\$181	\$220	\$282	\$317	\$333	420.3%
Antiasthmatic & Bronchodilator	\$157	\$123	\$147	\$171	\$186	\$193	\$210	\$226	\$251	\$256	63.1%

Other therapeutic drug categories have also seen their average reimbursement per prescription decline sharply in the last few years, although the timing of the downturns may be somewhat different from anti-inflammatories and opioids. In many cases, those declines coincided with the change in the reimbursement methodology in the Medi-Cal Fee Schedule on which the California workers' compensation prescription drug fee schedule is based. That change, which took effect in April 2016, implemented new Federal Upper Limit (FUL) values required under the Affordable Care Act. The impact was immediate and significant, as evidenced by the subsequent declines in average drug prices for most therapeutic drug groups.

While the recent trend of decreasing average payments is evident for most drug groups, there are exceptions, including anticonvulsants, ophthalmics, antidiabetics, and antiasthmatics/bronchodilators, each of which saw their average payment per prescription hit a 10-year high in 2018. In some of these cases, the ongoing growth in the average payments may reflect the dominance of a small number of high-cost brand drugs within the group, or the presence of so-called “novelty drugs,” where drug manufacturers have introduced new versions of an existing drug with a customized dosage or a new delivery system, with pricing that is not well-contained by the pharmacy fee schedule.⁵

Discussion

This study shows that as the workers' compensation medical reforms of the past 20 years have been implemented, there has been a change in the mix of pharmaceuticals dispensed to California injured workers, which in turn has helped fuel a redistribution of workers' compensation pharmaceutical payments among therapeutic drug groups. Much of the change that has occurred has been driven by the declining use of opioids and the ongoing efforts to find suitable non-opioid alternatives for the treatment of pain -- with NSAIDs and anticonvulsants being the most prominent examples. Indeed, the latest findings show that since 2009, opioids have declined from more than 30 percent of the prescriptions dispensed in the California workers' compensation to just 18 percent in 2018 -- a relative decline of 41 percent in ten years; while over that same decade, payments for opioids dropped from 23.5 percent to 13.8 percent of the total drug spend in the system. Meanwhile, NSAIDs and anticonvulsants have represented a growing proportion of the workers' compensation prescriptions, with anti-inflammatories surpassing opioids to become the number one therapeutic drug group in 2015. In each of the four years since then, both NSAIDs and anticonvulsants have continued to become more prevalent, while opioid's share of the workers' compensation prescriptions and dollars has continued to drop.

Other therapeutic drug groups that have become more prevalent in workers' compensation in recent years include dermatological medications (which have also become the most costly drug group in the system), antidepressants, and non-narcotic analgesics; while groups that along with opioids have accounted for a dwindling share of the workers' compensation prescriptions include musculoskeletal and ulcer drugs.

Among the factors that contributed to this dramatic shift:

- controls enacted by medical provider networks and pharmacy benefit managers;
- the adoption of evidence-based treatment guidelines, mandatory utilization review, and independent medical review;
- increased media attention, public awareness, and physician education about the risks of opioid use;
- changes in the need to treat various side effects (*i.e.*, constipation, ulcers, sexual dysfunction) as certain drugs become more or less common; and more recently,
- the implementation of the MTUS prescription drug formulary, which includes lists of drugs that are “non-exempt” from utilization review, as well as special fill and perioperative fill rules for specific drugs -- including many opioids and musculoskeletal drugs -- limiting the quantity of drugs that can be dispensed.

This trend away from opioids and into other drug groups is likely to continue -- not only in workers' compensation, but in other health systems as well -- as the opioid epidemic has captured the attention of public policymakers and the media at the state and national level. Indeed, many recent public policy initiatives have focused on increased monitoring of opioid prescribers, clarifying what is appropriate use of opioids, finding lower-risk, non-opioid alternatives to treat pain, and curbing the detrimental effects of these drugs (including abuse, addiction, overdoses, and fatalities).

⁵ The pharmacy fee schedule sets a maximum allowance for all drugs plus a dispensing fee. The maximum is identified at the NDC level by Medi-Cal, but if a drug's NDC is not listed in the Medi-Cal database, the maximum is currently 83 percent of the Average Wholesale Price of the lowest priced therapeutic equivalent, making it difficult to contain the cost of these drugs.

Though opioid use is down, some drug groups that now account for a growing share of workers' compensation prescriptions come with their own sets of issues, side effects, and potentially dangerous drug interactions, so care must be taken to avoid simply replacing one problem with another. Highly addictive benzodiazepines, such as Valium, Xanax, Ativan, Librium, and Klonopin, are a prime example of this. Originally prescribed as tranquilizers, benzodiazepines are found in multiple therapeutic drug groups, including anticonvulsants, antianxiety drugs, and hypnotics/sedatives. A study by JAMA last month showed that benzodiazepines are increasingly prescribed by general practitioners and other non-psychiatrists for a wide range of conditions, including back and chronic pain, anxiety, and insomnia – often along with other medications – and implicated benzodiazepines in a growing number of overdose deaths.⁶ The results of the JAMA study dovetail with recent CWCI research on polypharmacy claims, which found that in a sample of claims in which prescriptions were dispensed to California injured workers in 2016 and 2017, 33 percent had two concurrent prescriptions; 20 percent had three to four concurrent prescriptions; and 4 percent had five or more concurrent prescriptions.⁷ Noting the health risks associated with polypharmacy, including potentially dangerous drug interactions and increased overdose risk when controlled substances are part of the drug mix, the study concluded that reductions in opioid use and attention to drug combinations that include an opioid (*e.g.*, opioids and benzodiazepines or opioids and muscle relaxants) should improve injured workers' treatment and facilitate their return to work. At the same time, to the extent that these changes lead to increased use of opioid alternatives such as NSAIDs, they could result in fewer drugs being used to treat injured workers and/or a change in the mix of drugs used.

Changes in the distribution of the prescription drug spend among therapeutic drug groups reflect multiple factors: changes in the proportion of all prescriptions represented by each group; changes in the mix of drugs within each group (including generics vs. brand drugs); the concentration of single-source, patented brand drugs within a group; and changes in average amounts paid for drugs within each group. This study found that among the top 5 drug groups, anticonvulsants have seen the most significant growth over the past 10 years, as their share of the drug spend more than tripled; however, nearly all of that growth has been in the past four years, coinciding with the ongoing decline in opioids' share of prescription payments, suggesting that certain anticonvulsants are being used as alternatives to opioids for the treatment of pain. Notably, the average amount paid for anticonvulsant prescriptions increased from \$102 in 2016 to \$125 in the first half of 2018 (+22.5 percent), and the vast majority of these prescriptions (98 percent) were for brand drugs. This is not surprising as the anticonvulsants used in California workers' compensation are heavily concentrated in just two drugs, one of which is only available as a brand, and that drug accounted for nearly three quarters of the anticonvulsant payments in the first half of 2018.

Dermatological drugs, which include high-cost topical creams, gels, and patches used for pain management, have also represented an increasing share of the prescription dollars over the past decade, though unlike anticonvulsants, the growth in dermatological payments has been fairly steady. Dermatologicals surpassed opioids to become the most costly drug group in California workers' compensation in 2017, and they again topped the list in 2018.

The recent increases in the dermatologicals' share of the prescription drug spend have coincided with a decrease in the prevalence of custom compounded topicals,⁸ which for several years had been an area of abuse and fraud in the system. This began to change in 2011, when state lawmakers enacted legislation (AB 378, Solorio), a bill that attempted to rein in the high cost of the custom compounded drugs. Effective January 1, 2012, AB 378 instituted medical billing changes and unit price controls, required more detailed itemization of the NDCs associated with pharmacy-compounded drug products, and capped the price for physician-dispensed compounded drugs. While AB 378 did not effectively reduce the unit cost of compounds as hoped, these changes -- along with well-publicized indictments for compounded drug kickback schemes -- increased awareness, and reduced the prevalence of custom compounds, which in turn reduced the total amount paid for custom compounded topicals.

⁶ Sumit D. Agarwal, MD; Bruce E. Landon, MD, MBA, MSc., Patterns in Outpatient Benzodiazepine Prescribing in the United States. JAMA Network Open, January 2019.

⁷ Jones, S. An Examination of Polypharmacy Claims in California Workers' Compensation. CWCI Research Note, August 2018.

⁸ Topical Analgesics: Expensive and Avoidable, Rx Informer, Fall 2013.

As compounded drugs became more closely scrutinized, some of the drug wholesalers who had promoted custom compounded products switched to marketing mass-produced, high-cost, private label topicals, dispensed either through physician offices or mail order. As a result, over the past five years manufactured private-label topicals, which are identified by a single NDC and usually contain one or more active ingredients commonly found in over-the-counter topical analgesics (*e.g.*, capsaicin, lidocaine, methyl salicylate and/or menthol), have accounted for a growing share of the prescription dollars. At the same time, other topical products that contain a prescription NSAID (*e.g.*, diclofenac), have also contributed to the increases in dermatologicals' share of the prescription payments. Diclofenac topicals are available in brand and generic versions, and in a wide variety of formulations and strengths, some of which (*e.g.*, diclofenac sodium 1 percent) are listed as exempt from utilization review in the MTUS formulary, so they have become increasingly prevalent in workers' compensation as physicians look for non-opioid alternatives to treat pain.

While dermatologicals clearly account for a growing share of the California workers' compensation drug spend, recent anti-fraud efforts that cracked down on the marketing of private label drugs may help curb the growth of payments for those types of products. Last month federal prosecutors in Southern California secured a conviction in a case involving more than \$211 million in payments for compound creams and private label drugs that doctors allegedly prescribed in exchange for kickbacks; and in a superseding grand jury indictment, the same marketers were accused of paying doctors kickbacks to prescribe compounded creams and drugs for which insurers were billed at least a quarter billion dollars.⁹ Notably, many of the dermatologicals in this study contain the same over-the-counter ingredients found in several of the compound and private label drugs that were marketed in the kickback scheme.

In addition to the anti-fraud efforts, results of recent research also may impact the volume and reimbursement of many high-price dermatological drugs by providing UR and IMR physicians with support in their efforts to curb the use of compounded topicals that have been problematic in workers' compensation. A study published this month in the *Annals of Internal Medicine* found that compounded pain creams made from anticonvulsants, muscle relaxants, and NSAIDs typically prescribed in pill form are no better for chronic pain than topical treatments that contain no medicine at all.¹⁰ In comments to Reuters Health, the lead author of the study, Steven P. Cohen, M.D. stated, "This matters because compounded pain creams are much more expensive than prescribed (lidocaine, diclofenac) or over-the-counter (capsaicin) pain creams, but they didn't provide meaningful benefit compared to placebo cream."

This study has focused on changes in California workers' compensation prescription drug utilization and payments; and the results confirm a continued shift in the types of drugs used to treat injured workers. However, because California's adoption of the MTUS Prescription Drug Formulary carried with it the legislative promise to lower drug costs, increase quality of care, and lower friction costs associated with pharmaceutical UR and IMR, the Institute is continuing to monitor disputes over prescription drug requests, which prior studies have shown consistently accounted for nearly half of all treatment disputes that go through independent medical review. Last July, a CWCI study offered a preliminary look at pharmaceutical UR and IMR data from the first few months that system stakeholders were transitioning into the formulary and measured preliminary reductions in the proportions of UR and IMR involving prescription drug requests.¹¹ In Part 2 of this research series, the Institute will revisit that issue and take an expanded look at first-year formulary outcomes, providing updated data and more detail on how the formulary has impacted UR and IMR prescription drug disputes, including changes in drug utilization and cost by formulary category.

⁹ Jones, G. Marketer Pleads to Kickback Charge in \$211M Compound Drug Scheme, *Work Comp Central*, January 30, 2019.

¹⁰ Robert E. Brucher, PharmD, PhD; Connie Kurihara, RN; Mark C. Bicket, MD; Parvaneh Moussavian-Yousefi, PharmD; David E. Reece, MD; Lisa M. Solomon, BS; Scott R. Griffith, MD; David E. Jamison, MD; Steven P. Cohen, MD. *Compounded Topical Pain Creams to Treat Localized Chronic Pain: A Randomized Controlled Trial*, *Ann. Intern. Med.* 2019.

¹¹ Swedlow, A., Bullis, R. "Initial UR & IMR Prescription Drug Outcomes Under the Workers' Comp Formulary," *Spotlight Report*, July 2018.

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California Workers' Compensation Institute

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