



A Study of Workers' Compensation Drug Payments in New York State

INTRODUCTION

The purpose of this study is to provide insight into drug payments made on workers' compensation claims in New York State. To that end, the Rating Board examined detailed medical transaction data to identify payments for drugs. This study analyzes the percentage of total medical payments dedicated to drugs, tracks how that percentage changes over the life of a claim, and investigates specific drugs, drug categories, and payments made for those drugs over time.

KEY FINDINGS

The following findings relate to workers' compensation drug and total medical payments from service years¹ 2010 to 2017:

- Drug spend represents a significant percentage of total medical spend in each service year for workers' compensation claims in New York State. For service years 2012 through 2016, drug payments have averaged 18.0% of medical costs. This percentage has remained relatively stable over this period.
- As claims age, the proportion of the drug spend to total medical spend increases and plateaus at almost 50% for active claims over 10 years old. This phenomenon holds true even though the drug spend on a claim generally decreases over time, because the spend for other medical services decreases at a faster rate.
- Oxycodone and its combinations account for more drug spend than any other drug in each service year. In fact, there are more dollars paid out for Oxycodone than Pregabalin and Lidocaine combined, which in terms of dollars spent are ranked as second and third respectively.

¹ "Service Year" refers to the calendar year in which services are performed for a specific treatment. Services are not reported to the Rating Board until a payment transaction takes place, and as a result, there is often a lag of three to four months between the date of service and the date that the corresponding record is reported in medical transaction data. "Transaction date" generally refers to the date that a medical bill is reported to the Rating Board.



- The percentage of the drug spend on generic drugs increased substantially between service years 2013 and 2014 and continued to increase in the years that followed. Nevertheless, dollars paid for brand name drugs still represent a larger share of the total drug spend.
- Pharmacies dispensed 98% of the drugs included in this study.
- Central nervous system agents account for the majority of the drug spend in New York State. Opiate agonists, such as Oxycodone and Fentanyl, while declining as a proportion of drug spend since service year 2012, still account for approximately 30% of the drug spend.

STUDY DATA

This study utilizes the Rating Board’s Workers’ Compensation Medical Data Call, which includes transactional level detail of medical payments. For drug transactions, this data provides information at the National Drug Code (“NDC”) level, which facilitates an analysis of drug spend for each drug. Although NDC information is generally publicly available, the Rating Board has obtained drug reference tables from Truven, a third-party vendor, which were used to map the NDCs to drug names and categories.

This study examines information from the Medical Data Call from service years 2010 to 2017 with transaction dates prior to June 30, 2017. Up to \$1.2B in drug spend and \$6.9B of total medical spend are analyzed over the study period.



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I. DRUG SPEND AS A PERCENTAGE OF MEDICAL SPEND BY SERVICE YEAR

The Take Away: Drug spend represents a significant percentage of total medical spend in each service year for workers’ compensation claims in New York State. For service years 2012 through 2016, drug payments have averaged 18.0% of medical costs. This percentage has remained relatively stable over this period.

The Details: Drug spend, which varies from 17.0% to 19.1% of total medical spend recorded in each service year examined below, represents the third largest category of medical spend after physicians and hospitals. Exhibit 1 shows the drug spend and total medical services spend for service years 2012 to 2016.

Exhibit 1 Drug Payments by Service Year (\$ Millions)			
Service Year	Drug Payments	Total Medical Payments	Drug Payments Percentage
2012	173	1,018	17.0%
2013	196	1,067	18.4%
2014	213	1,118	19.1%
2015	203	1,119	18.2%
2016	186	1,082	17.2%
Total	972	5,405	18.0%

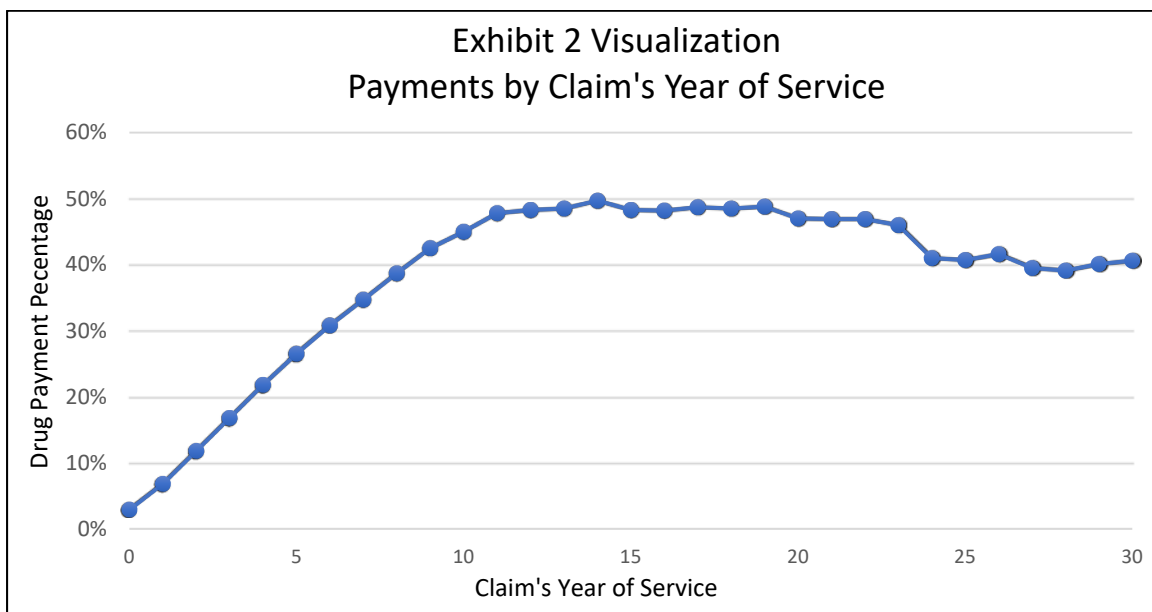


II. DRUG SPEND BASED ON THE CLAIM'S YEAR OF SERVICE

The Take Away: As claims age, the proportion of the drug spend to total medical spend increases and plateaus at almost 50% for active claims over 10 years old. This phenomenon holds true even though the drug spend on a claim generally decreases over time, because the spend for other medical services decreases at a faster rate.

The Details: The proportion of drug spend to total medical spend begins at approximately 3% when a claim's year of service² is zero. This is because most claimants receive other medical services, such as surgeries, hospital services, and the like, early in the life of a claim, and as claims age, those other medical services decrease significantly and at a much faster pace than the decrease in drug spend. As a result, the proportion of drug spend to total medical spend increases each service year and levels out at approximately 40-50% for active claims with medical services more than 10 years after the date of injury.

This analysis was made by summarizing medical payments by age of claim using the claim's year of service. The graph below demonstrates this pattern and is followed by Exhibit 2, which contains record counts and paid amounts for both drug spend and total medical spend by a claim's year of service, along with the percentages of drug spend.



² A claim's year of service is defined as the difference between the year of service and the year of injury. For example, if a service was performed in the year of injury, the claim's year of service is zero. If a service was performed in the calendar year following the year of injury, the claim's year of service is one. This measure will be used throughout this study to identify the spend on medical services by age of claim so that claims of a common treatment age can be compared.



Exhibit 2						
Payments by Claim's Year of Service						
(1) Claim's Year of Service	(2) Total Medical Record Count ('000s)	(3) Total Medical Payments (\$ Millions)	(4) Drug Record Count ('000s)	(5) Drug Payments (\$ Millions)	(6) = (4) / (2) Drug Record Percentage	(7) = (5) / (3) Drug Payment Percentage
0	24,781	1,883	604	54	2.4%	2.9%
1	20,342	1,392	784	94	3.9%	6.8%
2	9,216	775	663	91	7.2%	11.8%
3	5,586	511	579	86	10.4%	16.8%
4	3,702	357	498	78	13.5%	21.8%
5	2,698	270	437	72	16.2%	26.5%
6	2,104	215	390	66	18.5%	30.8%
7	1,737	182	359	63	20.7%	34.7%
8	1,431	154	327	60	22.9%	38.7%
9	1,186	131	298	56	25.1%	42.5%
10	1,018	115	275	52	27.0%	45.0%
11	880	99	252	47	28.6%	47.8%
12	766	89	228	43	29.8%	48.3%
13	677	80	205	39	30.3%	48.5%
14	597	71	185	35	31.0%	49.7%
15	547	66	169	32	30.9%	48.3%
16	507	61	153	29	30.2%	48.2%
17	483	57	146	28	30.2%	48.7%
18	453	53	139	26	30.7%	48.5%
19	434	50	134	25	30.9%	48.8%
20	418	49	127	23	30.4%	47.0%
21	393	45	119	21	30.3%	46.9%
22	366	42	108	19	29.5%	46.9%
23	334	38	97	18	29.0%	46.0%
24	285	35	81	14	28.4%	41.0%
25	230	27	67	11	29.1%	40.7%
26	190	22	54	9	28.4%	41.6%
27	149	19	44	8	29.5%	39.5%
28	116	15	35	6	30.2%	39.1%
29	87	11	27	4	31.0%	40.1%
30	51	7	16	3	31.4%	40.6%
31	31	4	10	2	32.3%	40.1%
32	24	3	7	1	29.2%	37.5%
33	20	3	6	1	30.0%	31.4%
34+	94	11	27	4	28.7%	32.8%
Total	81,932	6,940	7,651	1,218	9.3%	17.5%



III. TOP DRUGS BY PAID AMOUNTS

The Take Away: Oxycodone and its combinations account for more drug spend than any other drug in each service year examined. In fact, there are more dollars paid out for Oxycodone than Pregabalin and Lidocaine combined, which in terms of dollars spent are ranked as second and third respectively.

The Details: Identifying the top drugs in the workers’ compensation system is helpful to understand treatments provided to injured workers. Payments for Oxycodone represent the largest share of drug spend. In service year 2016, payments made for Oxycodone and its combinations represent 15.7% of all drug spend.

At least two other drugs merit attention. First, Pregabalin, which in 2012 was ranked 4th among drugs with a 5.0% share of drug spend, rose in ranking to 2nd in 2016 with an 8.0% share of drug spend. Second, Duloxetine HCL was ranked 5th with a 4.5% share of drug spend in 2012 and decreased to 12th in 2016 with a 2.3% share of drug spend. Exhibit 3 contains the top 15 drugs for service year 2016 and a 5-year history for each. Appendix 1 contains additional information on each drug.

Exhibit 3						
Top 15 Drugs by Payments in Service Year 2016 Including a Five-Year History for Each Drug						
Drug Name	2012	2013	2014	2015	2016	2016 Rank
Oxycodone & Comb.	15.2%	14.2%	16.4%	16.3%	15.7%	1
Pregabalin	5.0%	5.2%	5.8%	6.8%	8.0%	2
Lidocaine & Comb., S/M	7.2%	7.5%	6.9%	7.2%	7.3%	3
Gabapentin	3.2%	3.1%	3.2%	3.4%	4.0%	4
Cyclobenzaprine	2.4%	2.6%	2.9%	3.1%	3.1%	5
Diclofenac, S/M	2.4%	2.3%	2.5%	2.9%	3.1%	6
Tapentadol	2.0%	1.9%	1.8%	2.2%	2.9%	7
Fentanyl & Comb.	5.2%	4.4%	4.3%	3.7%	2.8%	8
Diclofenac Sodium	1.4%	1.4%	1.4%	2.2%	2.7%	9
Hydrocodone & Comb.	3.3%	2.7%	2.6%	2.9%	2.6%	10
Ibuprofen & Comb.	0.4%	1.1%	2.5%	3.4%	2.4%	11
Duloxetine HCL	4.5%	4.9%	3.5%	2.8%	2.3%	12
Naproxen & Comb.	1.2%	1.2%	1.9%	2.5%	2.3%	13
Oxymorphone	3.6%	2.8%	2.4%	2.2%	2.1%	14
Celecoxib	3.3%	3.3%	3.5%	2.3%	2.0%	15

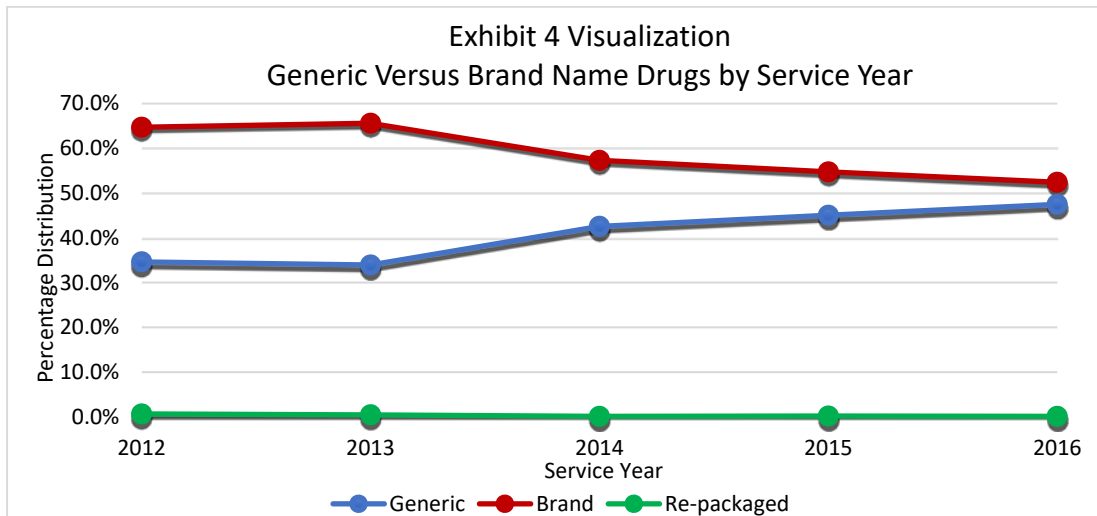


IV. GENERIC VERSUS BRAND NAME DRUGS

The Take Away: The percentage of the drug spend on generic drugs increased substantially between service years 2013 and 2014 and continued to increase in the years that followed. Nevertheless, dollars paid for brand name drugs still represent a larger share of the total drug spend.

The Details: The share of generic drugs out of the total drug spend is important to understand because it impacts system costs and can be an avenue for savings in the future. When patents expire on brand name drugs, others in the pharmaceutical industry are able to manufacture those drugs, and as a result, the drug price for the “generic” version is more competitive. In addition, the pharmaceutical fee schedule, which was implemented in New York State in July of 2007, distinguishes between the reimbursement rates for brand name and generics.³

The generic share of drug spend has been increasing in each of the last three years as is shown in Exhibit 4. The larger than usual change in drug spend among brand and generic drugs in 2013 and 2014 is caused, in part, by Lidocaine and Duloxetine coming off patent. Based on the analysis, repackaged drugs represent less than 1% of the drug spend.



³ “The maximum reimbursement or payment for prescription drugs or medicines ... shall be the Average Wholesale Price for the national drug code for the prescription drug or medicine on the day it was dispensed minus twelve percent of the Average Wholesale Price plus a dispensing fee of four dollars for brand name drugs or medicines or minus twenty percent of the Average Wholesale Price plus a dispensing fee of five dollars for generic drugs or medicines.” 12 NYCRR Section 440.5 a. 1. (A description of reimbursement rates in the New York State Pharmacy Fee Schedule).



Exhibit 4					
Generic Versus Brand Name Drugs by Service Year					
Type of Drug	2012	2013	2014	2015	2016
Generic	34.6%	33.9%	42.6%	45.1%	47.5%
Brand	64.7%	65.6%	57.3%	54.7%	52.4%
Re-packaged	0.7%	0.5%	0.1%	0.2%	0.1%

The expiration of drug patents can be a predictor of shifts from brand name drugs to generic drugs. However, certain drugs have multiple patents and extensions, which complicates this analysis. Exhibit 5 demonstrates that generally, the expiration of drug patents impacts the proportion of drug spend directed to generic drugs for each of the top 15 drugs in service years 2012 to 2016.

Exhibit 5 Visualization
Sample of Brand Versus Generic for Top Drugs

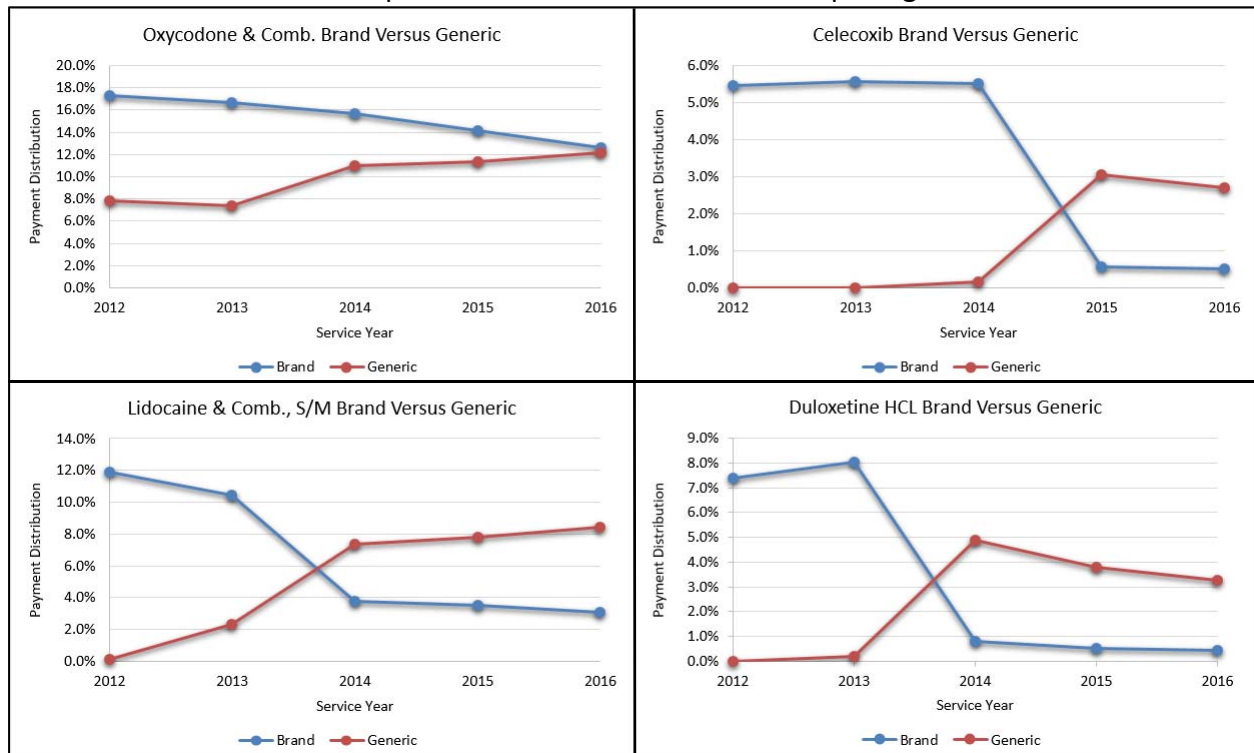




Exhibit 5							
Brand vs. Generic for the Top 15 Drugs by Payments in Service Year 2016 and a 5-year History for Each Drug							
Drug Name	Type	Service Year					Notable Full or Partial Patent Expiration Dates
		2012	2013	2014	2015	2016	
Celecoxib	Brand	5.4%	5.6%	5.5%	0.6%	0.5%	5/30/2014 12/2/2015
	Generic	0.0%	0.0%	0.2%	3.1%	2.7%	
Cyclobenzaprine	Brand	1.6%	2.6%	3.1%	3.3%	3.0%	
	Generic	2.4%	1.9%	1.6%	1.6%	1.9%	
Diclofenac Sodium	Brand	1.9%	1.8%	1.7%	2.8%	2.1%	
	Generic	0.4%	0.6%	0.6%	0.6%	2.2%	
Diclofenac, S/M	Brand	4.1%	3.9%	3.3%	3.5%	3.8%	
	Generic	0.0%	0.0%	0.7%	1.0%	1.0%	
Duloxetine HCL	Brand	7.4%	8.1%	0.8%	0.5%	0.4%	12/11/2013
	Generic	0.0%	0.2%	4.9%	3.8%	3.3%	
Fentanyl & Comb.	Brand	4.1%	4.2%	4.5%	3.7%	2.6%	
	Generic	4.4%	3.3%	2.5%	2.1%	1.9%	
Gabapentin	Brand	0.7%	0.9%	1.2%	1.7%	2.3%	
	Generic	4.7%	4.4%	4.0%	3.7%	4.1%	
Hydrocodone & Comb.	Brand	1.0%	0.6%	0.5%	0.8%	1.0%	
	Generic	4.5%	3.9%	3.8%	3.7%	3.1%	
Ibuprofen & Comb.	Brand	0.1%	1.4%	3.4%	4.7%	3.0%	
	Generic	0.6%	0.5%	0.8%	0.7%	0.8%	
Lidocaine & Comb., S/M	Brand	11.9%	10.5%	3.8%	3.5%	3.1%	9/15/2013
	Generic	0.1%	2.3%	7.3%	7.8%	8.4%	
Naproxen & Comb	Brand	1.2%	1.3%	2.4%	3.0%	1.7%	
	Generic	0.8%	0.8%	0.6%	0.9%	1.9%	
Oxycodone & Comb.	Brand	17.3%	16.7%	15.7%	14.2%	12.6%	8/31/2013
	Generic	7.9%	7.4%	11.0%	11.4%	12.2%	
Oxymorphone	Brand	5.3%	3.5%	2.6%	2.1%	1.9%	
	Generic	0.6%	1.4%	1.2%	1.3%	1.4%	
Pregabalin	Brand	8.2%	8.9%	9.5%	10.7%	12.6%	
	Generic	0.0%	0.0%	0.0%	0.0%	0.0%	
Tapentadol	Brand	3.4%	3.3%	3.0%	3.5%	4.6%	
	Generic	0.0%	0.0%	0.0%	0.0%	0.0%	



V. DISPENSING OF DRUGS

The Take Away: Pharmacies dispensed 98% of the drugs included in this study.

The Details: The location of service for most drugs is a pharmacy. Physician dispensed drugs do not represent a large share of the drugs dispensed for injured workers in the State.

VI. CATEGORIES OF DRUGS

The Take Away: Central nervous system agents account for the majority of the drug spend in New York State. Opiate agonists, such as Oxycodone and Fentanyl, while declining as a proportion of drug spend since service year 2012, still account for approximately 30% of the drug spend.⁴

The Details: Central nervous system agents represent the largest share of the drug spend. The two largest categories of central nervous system agents are nonsteroidal anti-inflammatory agents (“NSAIDs”) and opiate agonists. Between service years 2012 and 2016, the share of drug spend for opiate agonists decreased from 33.5% to 28.9%, whereas the share of NSAIDs increased from 8.2% to 11.5%. Exhibit 6 contains a list of major drug categories utilized in the treatment of injured workers, along with the share of drug spend in each category. Exhibit 7 contains examples of drugs dispensed in each category. Appendix 2 provides more information on each drug category.

⁴ The I-STOP legislation, which was passed by the New York State legislature and signed by Governor Cuomo in 2012, requires (i) electronic prescribing, (ii) prescribers to consult the Prescription Monitoring Program Registry when writing prescriptions for Schedule II, III, and IV controlled substances, and (iii) dispensing data to be reported in real time.



Exhibit 6						
Major Drug Categories by Service Year						
Drug Category	Level	2012	2013	2014	2015	2016
Anti-infective Agents	1	0.7%	0.8%	0.8%	0.8%	0.9%
Autonomic Drugs	1	8.2%	8.2%	8.5%	9.1%	9.1%
Autonomic Drugs - Skeletal Muscle Relaxants	2	6.7%	6.7%	7.1%	7.7%	7.6%
Blood Formation, Coagulation, and Thrombosis	1	0.6%	0.6%	0.5%	0.5%	0.5%
Cardiovascular Drugs	1	1.2%	1.1%	1.0%	1.1%	1.2%
Central Nervous System Agents	1	70.0%	66.4%	67.5%	68.1%	68.2%
Central Nervous System Agents - Analgesics and Antipyretics	2	45.3%	42.4%	45.3%	45.3%	43.1%
Analgesics and Antipyretics - Nonsteroidal Anti-inflammatory Agents	3	8.2%	8.9%	11.1%	12.2%	11.5%
Analgesics and Antipyretics - Opiate Agonists	3	33.5%	30.4%	31.3%	30.4%	28.9%
Analgesics and Antipyretics - Opiate Partial Agonists	3	0.9%	1.0%	1.0%	1.0%	1.0%
Central Nervous System Agents - Anticonvulsants	2	5.2%	4.9%	4.7%	5.0%	5.8%
Central Nervous System Agents - Anxiolytics, Sedatives, and Hypnotics	2	4.2%	3.6%	3.0%	2.7%	2.6%
Anxiolytics, Sedatives, and Hypnotics - Benzodiazepines	3	1.4%	1.2%	1.0%	1.0%	1.0%
Central Nervous System Agents - Psychotherapeutic Agents	2	9.3%	9.2%	7.9%	7.4%	7.5%
Psychotherapeutic Agents - Antidepressants	3	7.4%	7.4%	6.0%	5.4%	5.5%
Psychotherapeutic Agents - Antipsychotics	3	1.8%	1.8%	1.9%	2.0%	2.0%
Antipsychotics - Atypical Antipsychotics	4	1.6%	1.6%	1.7%	1.9%	1.9%
Compound Drugs Ingredients	1	1.4%	3.4%	3.6%	2.3%	1.7%
Gastrointestinal Drugs	1	3.2%	2.9%	2.5%	2.3%	2.3%
Hormones and Synthetic Substitutes	1	1.1%	1.1%	1.0%	1.1%	1.3%
Hormones and Synthetic Substitutes - Adrenals	2	0.9%	0.9%	0.8%	0.9%	1.1%
Miscellaneous Therapeutic Agents	1	0.8%	1.0%	1.1%	1.1%	1.2%
Skin and Mucous Membrane Agents	1	11.4%	12.8%	11.7%	11.9%	11.8%
Skin and Mucous Membrane Agents - Antipruritics and Local Anesthetics	2	7.2%	7.5%	6.9%	7.2%	7.3%
All Other Classifications	1	1.4%	1.8%	1.9%	1.8%	1.7%
Total		100.0%	100.0%	100.0%	100.0%	100.0%



Exhibit 7		
Examples of Drugs in Major Drug Categories		
Drug Category	Level	Commonly Used Workers' Compensation Drugs
Anti-infective Agents	1	
Autonomic Drugs	1	
Skeletal Muscle Relaxants	2	Cyclobenzaprine, Metaxalone, Tizanidine, Carisoprodol & Comb.
Blood Formation, Coagulation, and Thrombosis	1	
Cardiovascular Drugs	1	
Central Nervous System Agents	1	Pregabalin
Analgesics and Antipyretics	2	Tramadol
Nonsteroidal Anti-inflammatory Agents	3	Diclofenac Sodium, Ibuprofen & Comb., Celecoxib, Naproxen & Comb., Meloxicam
Opiate Agonists	3	Oxycodone & Comb., Fentanyl & Comb., Tapentadol, Hydrocodone & Comb., Oxymorphone, Morphine Sulfate & Comb., Hydromorphone & Comb.
Opiate Partial Agonists	3	Buprenorphine & Comb.
Anticonvulsants	2	Gabapentin, Topiramate
Anxiolytics, Sedatives, and Hypnotics	2	Zolpidem Tartrate
Benzodiazepines	3	
Psychotherapeutic Agents	2	
Antidepressants	3	Duloxetine HCL
Antipsychotics	3	
Atypical Antipsychotics	4	
Compound Drug Ingredients	1	Bulk Compounding Ingredients: Gabapentin, Ketamine HCL
Gastrointestinal Drugs	1	Esomeprazole & Comb.
Hormones and Synthetic Substitutes	1	
Adrenals	2	
Miscellaneous Therapeutic Agents	1	
Skin and Mucous Membrane Agents	1	Diclofenac, S/M
Antipruritics and Local Anesthetics	2	Lidocaine & Comb., S/M, Methyl Salicylate & Comb., S/M
All Other Classifications	1	

An examination of these drug categories by claim's year of service reveals interesting trends. First, as claims age, the percentage of drug spend on cardiovascular and gastrointestinal drugs increases. Second, the proportion of spending on NSAIDs decreases as claims age, whereas the proportion of spending on opiate agonists increases as claims age. For example, NSAIDs represent almost 25% of the drug spend during the first year of a claim but under 7% during claim's year of service 10 or greater, whereas opiate agonists represent 13.4% of drug spend during the first year of a claim and almost 40% during claim's year of service 10 or greater. Third, the proportion of spending on skeletal muscle relaxants decreases as claims age, whereas the proportion of spending on psychotherapeutic agents increases as claims age. Exhibit 8 contains the major workers' compensation drug categories and subcategories by claim's year of service.



Exhibit 8										
Distribution of Drug Payments by Category and Claim's Year of Service										
Drug Category	Level	0	1	2	3-5	6-10	11-15	16-20	21-25	26+
Anti-infective Agents	1	7.6%	1.2%	0.6%	0.5%	0.4%	0.3%	0.4%	0.5%	0.4%
Autonomic Drugs	1	12.0%	10.5%	9.6%	8.7%	8.2%	8.6%	8.1%	7.6%	8.7%
Autonomic Drugs - Skeletal Muscle Relaxants	2	11.3%	9.7%	8.8%	7.6%	7.1%	6.2%	6.0%	5.7%	6.0%
Blood Formation, Coagulation, and Thrombosis	1	2.0%	0.9%	0.6%	0.4%	0.4%	0.4%	0.5%	0.7%	1.2%
Cardiovascular Drugs	1	0.1%	0.3%	0.4%	0.6%	0.8%	1.2%	2.0%	3.0%	5.6%
Central Nervous System Agents	1	50.4%	57.6%	63.1%	68.6%	71.9%	72.1%	74.2%	72.9%	66.5%
Analgesics and Antipyretics	2	41.6%	41.2%	41.5%	43.7%	45.5%	45.6%	49.5%	48.0%	43.1%
Nonsteroidal Anti-inflammatory Agents	3	24.7%	19.6%	15.2%	10.9%	8.0%	6.4%	6.3%	6.3%	6.5%
Opiate Agonists	3	13.4%	17.9%	22.8%	29.3%	34.6%	36.7%	40.5%	39.2%	33.1%
Opiate Partial Agonists	3	0.3%	0.7%	0.9%	1.2%	1.0%	0.7%	0.7%	0.6%	1.4%
Anticonvulsants	2	3.2%	5.0%	5.7%	5.5%	5.1%	5.6%	5.5%	5.0%	5.0%
Anxiolytics, Sedatives, and Hypnotics	2	0.8%	1.5%	2.1%	2.7%	3.7%	4.3%	4.5%	5.1%	5.3%
Benzodiazepines	3	0.3%	0.4%	0.6%	0.8%	1.1%	1.3%	1.8%	2.4%	3.2%
Psychotherapeutic Agents	2	1.8%	4.4%	6.9%	8.9%	9.7%	9.4%	8.2%	8.6%	6.9%
Antidepressants	3	1.6%	3.7%	5.5%	6.8%	7.2%	7.2%	6.5%	6.9%	5.6%
Antipsychotics	3	0.2%	0.7%	1.4%	2.1%	2.5%	2.2%	1.7%	1.8%	1.2%
Atypical Antipsychotics	4	0.2%	0.7%	1.3%	1.9%	2.3%	2.0%	1.5%	1.5%	1.1%
Compound Drug Ingredients	1	5.3%	5.2%	3.7%	2.4%	1.5%	1.0%	1.1%	0.8%	1.2%
Gastrointestinal Drugs	1	2.2%	1.8%	1.8%	2.1%	2.6%	3.3%	3.1%	3.9%	5.0%
Hormones and Synthetic Substitutes	1	1.1%	0.6%	0.5%	0.6%	0.9%	1.9%	1.4%	1.3%	2.0%
Adrenals	2	1.0%	0.6%	0.5%	0.6%	0.7%	1.7%	1.1%	1.1%	1.7%
Miscellaneous Therapeutic Agents	1	1.9%	2.7%	1.8%	1.2%	0.7%	0.6%	0.2%	0.2%	0.2%
Skin and Mucous Membrane Agents	1	15.0%	17.1%	15.8%	13.7%	11.1%	8.8%	7.7%	7.5%	6.6%
Antipruritics and Local Anesthetics	2	7.1%	8.4%	8.3%	8.0%	7.4%	6.3%	5.9%	5.7%	5.3%
All Other Classifications	1	2.4%	2.1%	2.0%	1.4%	1.4%	1.8%	1.4%	1.6%	2.5%
Total	1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

A close examination demonstrates that since accident year 2013, a significant portion of spending on opiate agonists shifted to NSAIDs and skeletal muscle relaxants in the initial years of treatment, but after the initial years of treatment, this shift is less significant. Although opiate agonists remain a significant percentage of drug spend, there is also evidence of a general decline in the use of opiate agonists by accident year at the same claim’s year of service.

In service year 2013,⁵ there was a large increase in the use of compound drug ingredients. The top two ingredients by paid amounts in this category are Gabapentin and Ketamine HCL.⁶ Together, these two ingredients make up 50% of the spending on compound drug ingredients.

Exhibit 9 segments the data from Exhibit 8 by accident year and claim’s year of service for the specific categories mentioned to demonstrate shifting between drug categories in recent years and other changes as described above.

⁵ Note that the boxed diagonal in the compound drug ingredients section of Exhibit 9 highlights service year 2013.

⁶ See Appendix 1 for additional drug information.



Exhibit 9															
Notable Changes in Drug Category by Accident Year and Claim's Year of Service															
Opiate Agonists						Nonsteroidal Anti-inflammatory Agents									
Accident Year	Claim's Year of Service						Accident Year	Claim's Year of Service							
	0	1	2	3	4	5	6		0	1	2	3	4	5	6
2010		27.8%	28.2%	26.7%	29.8%	30.9%	30.4%	2010		15.5%	11.0%	9.9%	11.7%	12.1%	11.4%
2011	21.0%	23.6%	23.3%	27.3%	29.2%	29.8%		2011	21.6%	15.2%	12.3%	12.5%	12.5%	10.6%	
2012	17.0%	17.0%	21.7%	23.9%	25.4%			2012	21.1%	16.5%	16.1%	15.6%	14.0%		
2013	11.8%	16.2%	18.6%	19.9%				2013	21.3%	20.6%	20.7%	16.8%			
2014	12.5%	14.6%	16.6%					2014	27.0%	24.2%	17.8%				
2015	11.0%	12.5%						2015	28.0%	22.6%					
2016	8.1%							2016	27.4%						
Compound Drug Ingredients						Skeletal Muscle Relaxants									
Accident Year	Claim's Year of Service						Accident Year	Claim's Year of Service							
	0	1	2	3	4	5	6		0	1	2	3	4	5	6
2010		0.4%	1.8%	4.7%	4.0%	1.3%	1.1%	2010		10.3%	7.4%	7.0%	7.1%	7.5%	7.6%
2011	0.3%	2.1%	6.0%	5.3%	2.1%	1.4%		2011	12.3%	8.1%	6.8%	7.0%	7.1%	6.9%	
2012	2.0%	7.2%	6.7%	3.1%	1.5%			2012	10.3%	7.8%	8.1%	8.7%	8.3%		
2013	8.4%	8.7%	4.0%	2.4%				2013	10.2%	9.3%	9.7%	9.0%			
2014	8.3%	5.8%	2.6%					2014	11.5%	10.7%	10.4%				
2015	5.8%	5.2%						2015	11.7%	10.8%					
2016	5.6%							2016	10.1%						

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VIII. APPENDIX

Appendix 1	
Drug	Description
Celecoxib	(SEL-e-KOX-ib) is a nonsteroidal anti-inflammatory drug which works by reducing hormones that cause inflammation and pain in the body.
Cyclobenzaprine	(sye-kloe-BEN-za-preen) is a muscle relaxant which works by blocking nerve impulses that are sent to the brain.
Diclofenac Sodium	(dye-KLOE-fen-ak) is a nonsteroidal anti-inflammatory drug which works by reducing substances in the body that cause pain and inflammation. It is used to treat mild or moderate pain, or signs and symptoms of osteoarthritis or rheumatoid arthritis.
Diclofenac, S/M *	(dye-KLOE-fen-ak) is a nonsteroidal anti-inflammatory drug which works by reducing substances in the body that cause pain and inflammation. It is used to treat mild or moderate pain, or signs and symptoms of osteoarthritis or rheumatoid arthritis.
Duloxetine HCL	(doo-LOX-e-teen HYE-droe-KLOR-ide) is used to treat depression and anxiety. It is also used to relieve nerve pain in people with diabetes or ongoing pain due to medical conditions.
Fentanyl & Comb. **	(FEN-ta-nil) is an opioid medication which is used as part of anesthesia to help prevent pain after surgery or other medical procedures.
Gabapentin	(GA-ba-PEN-tin) is an anti-epileptic medication that affects chemicals and nerves in the body that are involved in the cause of seizures and some types of pain.
Hydrocodone & Comb. **	(HYE-droe-KOE-done) is an opioid pain medication used for around the clock treatment of severe pain.
Ibuprofen & Comb. **	(EYE-bue-PROE-fen) is a nonsteroidal anti-inflammatory drug which works by reducing hormones that cause inflammation and pain in the body. It is used to reduce fever and treat pain or inflammation caused by many conditions such as headache, toothache, back pain, arthritis, etc.
Ketamine HCL	(kee-tuh-meen HYE-droe-KLOR-ide) is a nonbarbiturate general anesthetic induction agent administered parenterally to achieve dissociative anesthesia. Ketamine hydrochloride does not cause muscle relaxation. It is a potent somatic analgesic and is particularly useful for brief, minor surgical procedures. Hallucinations, confusion, and disorientation may occur on emergence from anesthesia.
Lidocaine & Comb. **, S/M *	(li-do-caine) is used on different parts of the body to cause numbness or loss of feeling for patients having certain medical procedures. It may also be used to relieve pain and itching caused by conditions such as sunburn or other minor burns, insect bites or stings, poison ivy, poison oak, etc.
Naproxen & Comb. **	(na-PROX-en) is a nonsteroidal anti-inflammatory drug which works by reducing hormones that cause inflammation and pain in the body.
Oxycodone & Comb. **	(ox-i-KOE-done) is an opioid pain medication used for around the clock treatment of moderate to severe pain.
Oxymorphone	(OX-ee-MOR-fone) is an opioid pain medication used for around the clock treatment of moderate to severe pain.
Pregabalin	(pre-GAB-a-lin) is used to help control certain kinds of seizures, treat painful nerve diseases, and treat fibromyalgia among other reasons.
Tapentadol	(ta-PEN-ta-dol) is an opioid pain medication used for around the clock treatment of moderate to severe pain.
Sources:	Drugs.com, Webmd.com
*S/M	S/M relates to the skin/mucous membranes, rather than an oral substance like a pill. These substances can be ointments, patches, creams, etc.
**& Comb.	The listed substance is the primary pharmaceutically active ingredient that may have been combined with other drugs or agents.



Appendix 2	
Term	Description
Anti-infective Agents	Anti-infective is a general term used to describe any medicine that is capable of inhibiting the spread of an infectious organism or by killing the infectious organism outright. This term encompasses antibiotics, antifungals, antivirals, anthelmintic, antimalarial, antiprotozoal, and anti-tuberculosis agents.
Adrenals	Used to treat adrenal insufficiency which is a disorder characterized by underactive adrenal glands and insufficient production of the hormones cortisol and sometimes, aldosterone. The adrenal glands are small organs located at the top of each kidney. They consist of an inner layer called the medulla and an outer layer called the adrenal cortex. In the body, the hypothalamus, the pituitary glands, and the adrenal glands work together to produce hormones that control many body systems. If any part of their signaling and feedback system is not working, it can cause major disruptions and illness within the body.
Analgesics and Antipyretics	Analgesics are medicines that are used to relieve pain. They are also known as painkillers. The term analgesic refers to a medication that relieves pain without loss of consciousness. Antipyretic - a drug that reduces fever.
Anticonvulsants	Anticonvulsants are medicines that reduce severity and frequency of seizures. They are typically used in people with epilepsy or at high risk of having another seizure; however, they may be used to treat other conditions such as bipolar disorder, anxiety, nerve pain, and migraine.
Antidepressants	Broad group of drugs that are used in the treatment of depression. They do not cure depression but are usually effective at improving mood and relieving symptoms such as restlessness, anxiety, sleep problems, and suicidal thoughts.
Antipruritic and Local Anesthetics	Antipruritic drugs are used to prevent or relieve itching.
	Local Anesthetics are used for the interruption of the nerve transmission of pain sensations; act at site of application to prevent perception of pain.
Antipsychotics	Drugs that are used to treat symptoms of psychosis such as delusions, hallucinations, paranoia, or confused thoughts. They are used in the treatment of schizophrenia, severe depression, and severe anxiety.
Anxiolytics, Sedatives, and Hypnotics	Medicines that work on the central nervous system to relieve anxiety, aid sleep, or have a calming effect.
Atypical Antipsychotics	Newer antipsychotics, most of which were approved in the 1990s. They are used in the treatment of schizophrenia and other psychoses and work on a number of different receptors, including serotonin, dopamine, adrenergic, cholinergic, and histamine receptors. They are usually preferred over older-type antipsychotics because they are less likely to produce extrapyramidal side effects (drug-induced movement disorders).
Autonomic Drugs	Any large group of drugs that mimic or modify the function of the autonomic nervous system.
Benzodiazepines	Man-made medications that cause mild to severe depression of the nerves within the brain (CNS) and sedation (drowsiness). Seizures, anxiety, and other diseases that require benzodiazepine treatment may be caused by excessive activity of nerves in the brain.
Blood Formation, Coagulation, and Thrombosis	Blood Formation (aka Hematopoiesis or Hemopoiesis) is the continuous process by which the cellular constituents of blood are replenished as needed.
	Coagulation is the process by which a blood clot is formed.
	Thrombosis is clotting within a blood vessel that may cause infarction of tissues supplied by the vessel.
	Coagulation modifiers are drugs that act on the blood coagulation pathway in different places to prevent or promote blood clot formation. Coagulation modifiers that prevent blood clot formation are anticoagulants, antiplatelet drugs, and thrombolytic drugs. Those that promote blood clot formation are fibrinolytic. Heparin antagonists and platelet stimulating agents are used to reduce the risk of bleeding.



Appendix 2 (continued)	
Term	Description
Cardiovascular Drugs	Medicines that are used to treat medical conditions associated with the heart or circulatory system (blood vessels), such as arrhythmias, blood clots, coronary artery disease, high or low blood pressure, high cholesterol, heart failure, and stroke.
Central Nervous System Agents	Medicines that affect the central nervous system (CNS). The CNS is responsible for processing and controlling most of our bodily functions and consist of the nerves in the brain and spinal cord.
Compound Drug Ingredients	Compound drug ingredients are the components of a compound drug. A compound drug is a medication tailored to the needs of an individual patient by combining, mixing, or altering ingredients of several drugs. They can include active and inactive ingredients.
Gastrointestinal Drugs	Include many different classes of drugs that are used to treat gastrointestinal disorders.
Hormones and Synthetic Substitutes	Also known as hormone replacement therapy, uses synthetic or natural female hormones to make up for the decline or lack of natural hormones produced in a woman's body.
Miscellaneous Therapeutic Agents	Therapeutic agents relate to the treatment of disease or disorders by remedial agents or methods, having a beneficial effect on the body or mind.
Nonsteroidal Anti-inflammatory Agents	Also known as NSAIDs, this group of drugs work well to relieve pain, decrease fever, and reduce swelling and inflammation caused by an injury or disease.
Opiate Agonists	Opiate agonists are drugs that mimic the effects of naturally-occurring endorphins in the body and produce an opiate effect by interacting with the opioid receptor sites.
Opiate Partial Agonists	Partial opiate agonists only cause a partial activation of opioid receptors. Partial agonists create a ceiling effect after which no further receptor activation is possible.
Psychotherapeutic Agents	Used to treat psychosis, which refers to a group of mental disorders, such as depression, schizophrenia, etc.
Skeletal Muscle Relaxants	Also known as muscle relaxants, these are a diverse group of medicines that have the ability to relax or reduce tension in muscle. Muscle relaxants treat two main conditions: spasticity (stiff, rigid muscles) caused by conditions such as cerebral palsy, multiple sclerosis, and stroke; and muscle spasms, which are typically temporary and associated with conditions such as tension headache, low back pain, or fibromyalgia.
Skin and Mucous Membrane Agents	Used to treat disorders of the skin and mucous membrane. Mucous membrane is a thin layer of tissue that covers a surface, lines a cavity, or divides a space or organ.
Sources:	Drugs.com, Thefreedictionary.com, britannica.com, Webmd.com, opiates.com, medicine.net, opioidrisk.com, merriam-webster.com