



Leading the way for employers and injured workers

2017 was a year of advancement for our workers' compensation clients and their injured workers. In May, we announced that Express Scripts and myMatrixx were coming together to offer best-in-class pharmacy services for workers' compensation programs. By merging our core capabilities to deliver superior clinical expertise, advanced analytics and customized client experiences, **myMatrixx, an Express Scripts company, is better equipped to serve clients and injured workers.**

This was demonstrated by a significant decrease in payer's overall drug trend. **Spending on prescription drugs decreased by 3.3%** between 2016 and 2017 and drug utilization among injured workers decreased by 4.4% per user per year.

As the opioid crisis reached national emergency levels, myMatrixx recorded another year of decreases in opioid utilization. We consulted on state and federal regulatory changes to help curtail opioid abuse, delivered solutions that helped injured workers understand how to use these medications safely, and communicated directly with those at risk for adverse events. We leveraged our data to communicate with prescribers who may not be aware of the full extent of their patients' opioid use and to ensure connectivity across the care continuum. **In 2018, we're continuing these efforts and more at each point of care – in the physician's office, at the pharmacy and in the injured worker's home.**

This 2017 Drug Trend Report illustrates the shared commitment between myMatrixx and workers' compensation payers to provide unparalleled access to appropriate medications for injured workers, while protecting safety and reducing unnecessary costs.

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Clinical Account Management
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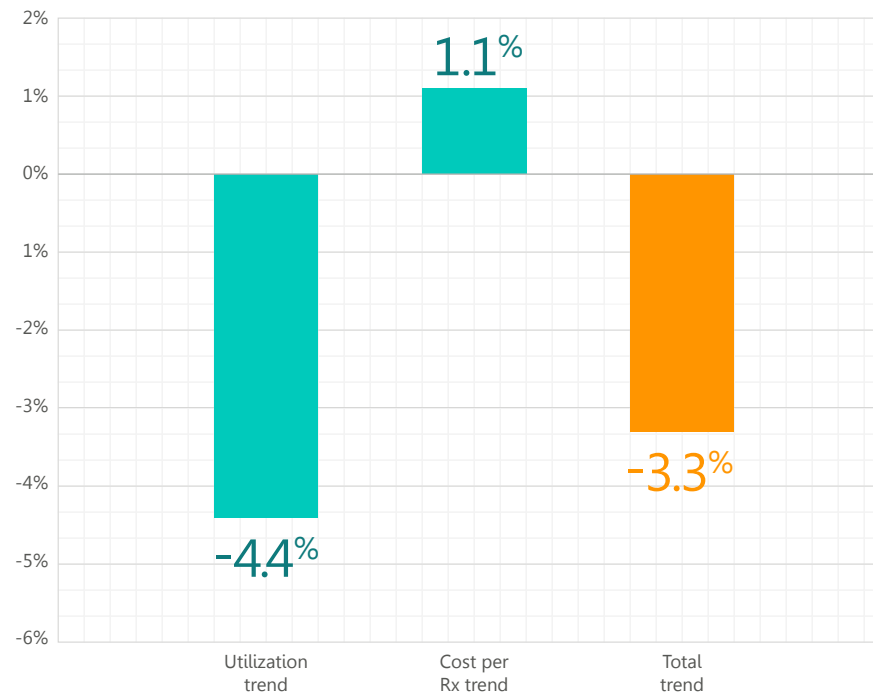
Holding down drug spending

In 2017, U.S. drug spending **decreased by 3.3%** for workers' compensation payers

- For payers with a workers' compensation program managed by myMatrixx, an Express Scripts company, per-user-per-year (PUPY) utilization decreased by 4.4% between 2016 and 2017.
- Overall opioid trend decreased 11.9%, influenced by our clinical solutions, aggressive client management and changes in state and federal policy focused on opioid prescribing.
- After experiencing a continued decline in spending PUPY in 2017, compounded medications are no longer in the top 10 therapy classes.

WORKERS' COMPENSATION PAYERS' DRUG TREND

2017 (compared to 2016)



52.4%
of the workers' compensation programs we managed reduced drug spending in 2017



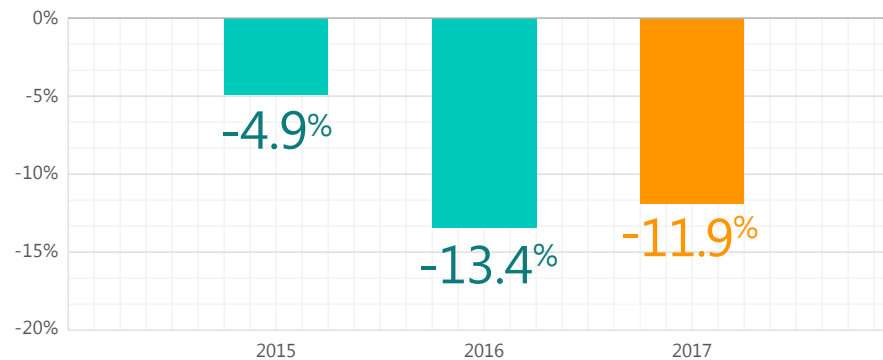
Curtailing the opioid epidemic

Average spending on opioids **declined 11.9%** for our workers' compensation payers, from \$388.80 to \$342.57 per user per year

- An estimated 2 million Americans abuse or are dependent on prescription opioids¹ and the U.S. loses more than 115 lives each day to opioid overdose.²
- Opioids continue to be the most expensive and highly utilized class of drugs for work-related injuries, accounting for 24.1% of total pharmacy spend in 2017.
- Across workers' compensation payers, morphine-equivalent dose (MED) trend continued to decline, with a 33.7% reduction in cumulative MED>100 and a 26.9% decrease in cumulative MED overall.
- The percentage of injured workers who used opioids for 30 or more days decreased from 24.6% in 2016 to 22.0% in 2017.
- On average, branded abuse-deterrent formulations (ADFs) cost \$532.67 more per adjusted Rx than their non-brand, non-ADF counterparts.

WORKERS' COMPENSATION PAYERS' DRUG TREND FOR OPIOIDS

2015-2017



74.2%
of payers spent less
on opioids in 2017

1. Boscarino JA, Rukstalis M, Hoffman SN, et al. Risk factors for drug dependence among out-patients on opioid therapy in a large US health-care system. *Addiction* 2010;105:1776–82. <http://dx.doi.org/10.1111/j.1360-0443.2010.03052.x> <https://www.cdc.gov/drugoverdose/data/overdose.html> Accessed Jan. 23, 2018
2. Rudd RA, Seth P, David F, Scholl L. Increases in Drug and Opioid-Involved Overdose Deaths — United States, 2010–2015. *MMWR Morb Mortal Wkly Rep.* ePub: 16 December 2016. DOI: <http://dx.doi.org/10.15585/mmwr.mm65051e1> <https://www.cdc.gov/drugoverdose/epidemic/index.html> Accessed Jan. 23, 2018



A closer look at opioid use

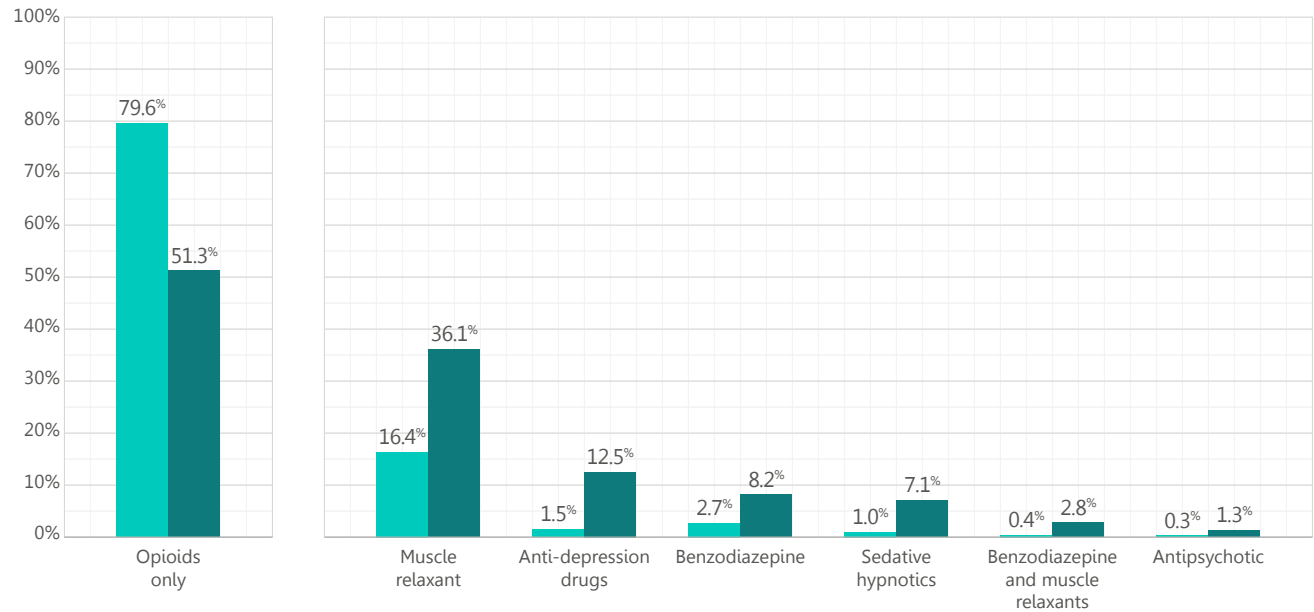
Some injured workers took a potentially dangerous combination of an opioid and other drug(s). We offer a holistic approach to opioid management and have seen lower use of these combinations compared to 2016.

- 25.7% took an opioid and a muscle relaxant.
- 5.3% took an opioid and a benzodiazepine.
- 1.5% took an opioid, a muscle relaxant and a benzodiazepine.
- Among injured workers using opioids for a short term (<30 days' supply), 79.6% used opioids only and 16.4% used an opioid and a muscle relaxant.
- For injured workers using opioids for a longer term (>30 days' supply), 51.3% filled both an opioid and a muscle relaxant.

PERCENT OF INJURED WORKERS USING COMBINATION OF OPIOIDS AND OTHER MEDICATIONS

2017, by combination type

Short term Long term



Spending on opioid overdose antidotes declined by more than 45%

- Although the number of injured workers who filled a prescription for an antidote more than doubled in 2017, there was a 46.1% decline in PUPY spend on antidotes.³
- The spending decrease was due to the shift from costlier Evzio® (naloxone auto-injector), with only 9.8% of prescriptions filled, to Narcan®, naltrexone or naloxone, which accounted for 90.2%.³

3. These figures may not be indicative of actual utilization, as many states allow dispensing of antidotes without a prescription.

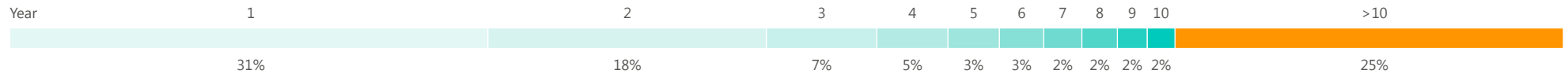


Age-of-injury effect: The longer an injured worker takes opioids for an injury, the faster costs rise

- During the first year, the total pharmacy cost per injured worker was \$204.51 (\$52.72 on opioids) with 38.2% filling an opioid prescription.
- After 10 years, the pharmacy cost per injured worker reached \$3,592.91 (\$1,967.93 on opioids) with 50.4% filling an opioid medication in 2017. This direct relationship with cost is one aspect of a phenomenon referred to as "age of injury effect." As additional time elapses after the injury, injured workers have the potential to be prescribed more expensive and higher doses of medications.

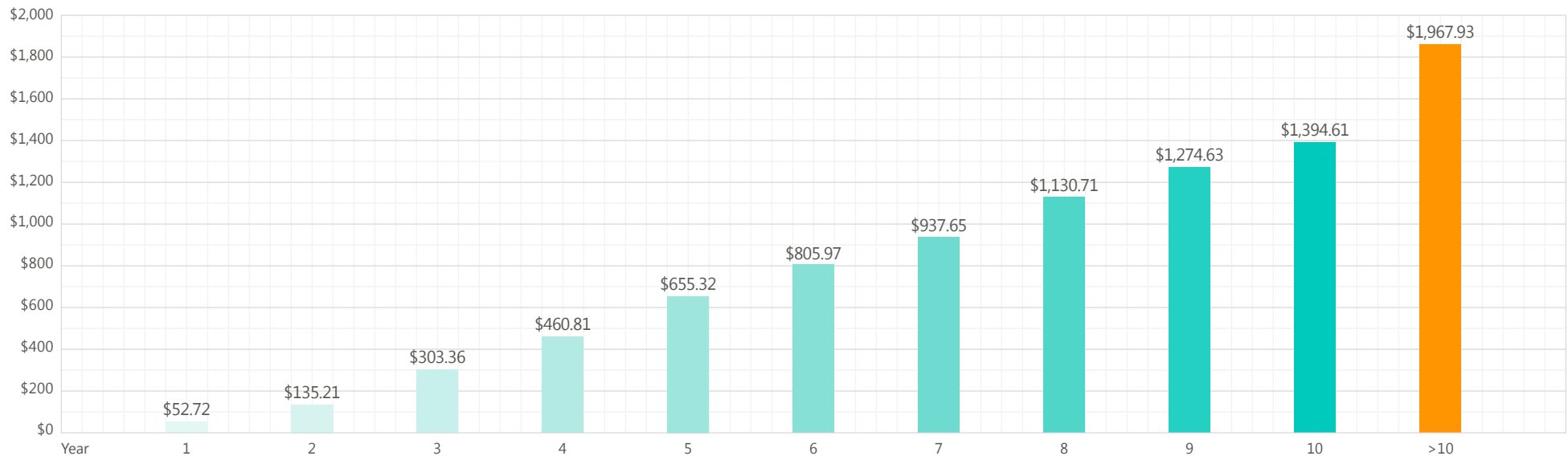
PERCENT OF INJURED WORKERS TAKING OPIOID MEDICATIONS

2017, by age of injury



OPIOID COST PER INJURED WORKER

2017, by age of injury





Managing patient opioid use requires a holistic approach



Pharmacist and point-of-sale solutions

- Concurrent Drug Utilization Review (DUR)
- Morphine equivalent dose (MED) limits
- ScriptAlert+SM
- Formulary limits
- State opioid days' supply limits

Consultative solutions and advanced analytics for payers

- Clinical Analytics Results Engine (CARE)
- Early intervention and opioid utilization analytics and reporting
- Comprehensive Pharmacist Review

Physician outreach and patient education

- Outreach to prescribers regarding dosing, fentanyl prescribing and potentially dangerous drug combinations
- Morphine equivalent dose (MED) limits
- Injured worker opioid education
- Advanced Opioid ManagementSM



\$80.9M

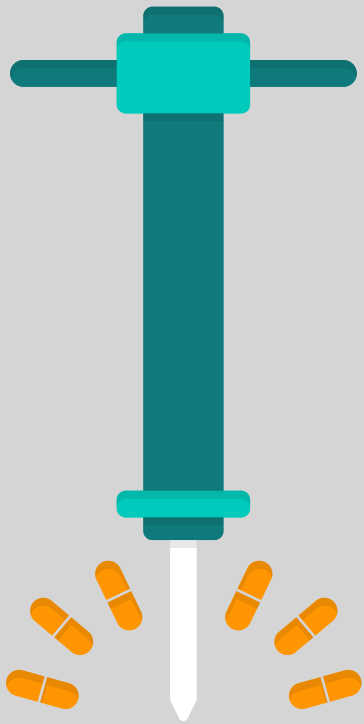
could have been saved by payers in 2017 by achieving optimal mix⁴

Elevating generic use for greater value

Generic fill rate **increased to 85.6%** across our workers' compensation payers in 2017

- Prescribers may choose to prescribe brand-name drugs over generic/therapeutic alternatives for many reasons, including habit, lack of awareness of available alternatives or patient request.
- Using more-expensive drug strengths or dosage forms when equally effective, lower-cost equivalents are available creates waste.
- State-level generic mandates and programs such as step therapy and the myMatrixx physician outreach program, which encourage the use of generics, can help reduce waste due to suboptimal mix.

4. The maximum, clinically appropriate generic fill rate for each therapy class



3 years

in a row that payer spending on compounded drugs has decreased

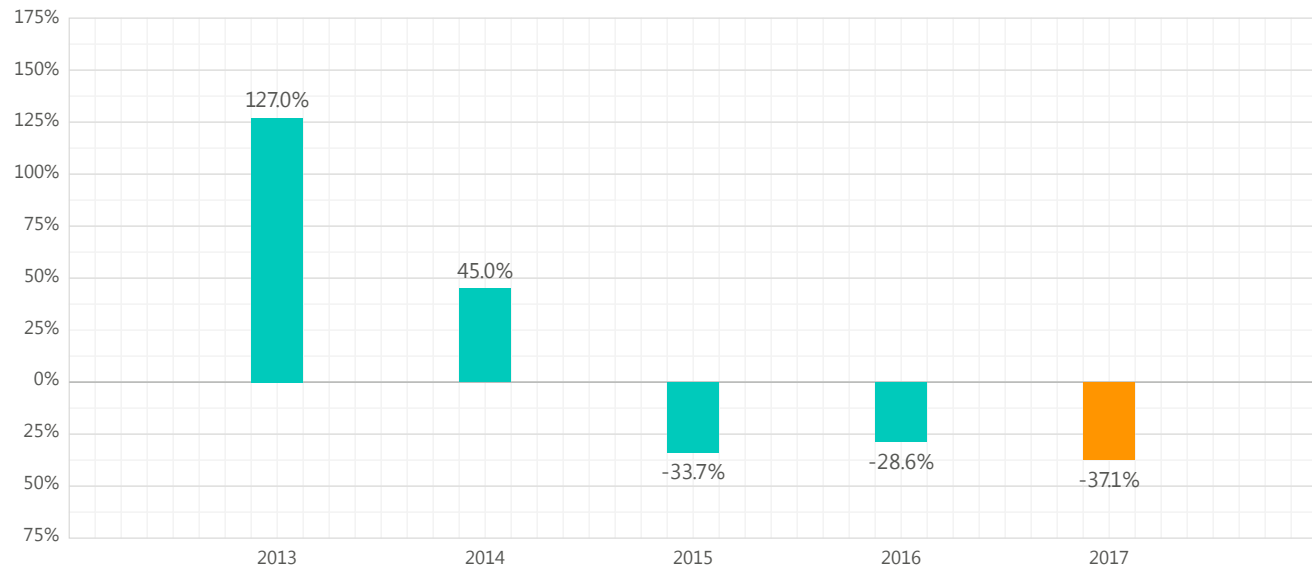
Driving down use of compounded medications

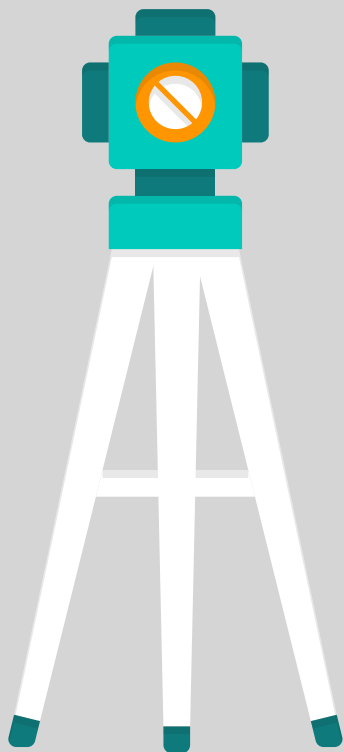
Spending **declined 37.1%** in 2017 for compounded medications, which fell from the top 10 therapy classes

- Compounded medications continue to be a focus – due to their high cost and because they are not considered first-line therapy for pain or other common conditions of injured workers, according to industry treatment guidelines, including Official Disability Guidelines (ODG) and American College of Occupational and Environmental Medicine (ACOEM).
- Utilization of compounded medications decreased 21.2%.
- Average cost of compounded medications decreased 15.9%.
- Typically, compounded medications are excluded from workers' compensation formularies, including state-specific formularies, and require review prior to dispensing for an injured worker.

WORKERS' COMPENSATION COMPOUNDED DRUG TREND

2013-2017





59.3%
of medications
dispensed by
physicians are
used to treat pain

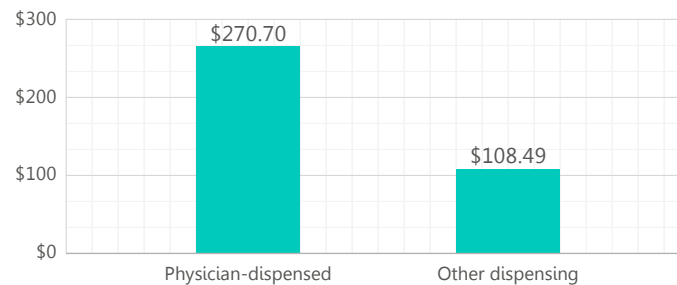
Focusing on physician-dispensed medications

Additional costs may be incurred when injured workers obtain medications directly from medical providers

- Physician-dispensed medications are typically repackaged or relabeled and are not subject to the same pricing regulations as those dispensed by a pharmacy.
- Safety may be a concern when physician dispensing occurs, due to an incomplete picture of the injured worker's drug history, and from the bypassing of safety checks performed by myMatrixx and a dispensing pharmacy, including review for possible drug interactions, dosing concerns and DUR.
- Three generic NSAIDs, ketoprofen, naproxen and etodolac extended release are new to the top 10 most prescribed drugs by physicians in 2017, replacing nabumetone (an NSAID), hydrocodone with acetaminophen (an opioid combination), and tizanidine (a muscle relaxant).

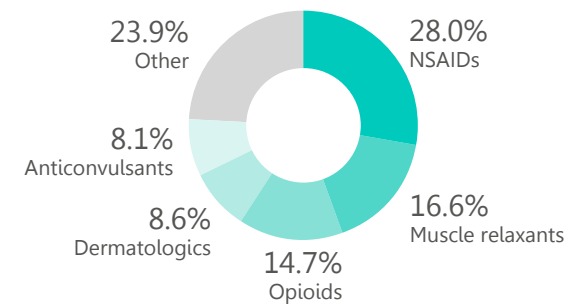
COST PER RX

2017, by type of dispensing



PERCENT OF PHYSICIAN-DISPENSED MEDICATIONS

2017, by therapy class



TOP 10 PHYSICIAN-DISPENSED MEDICATIONS

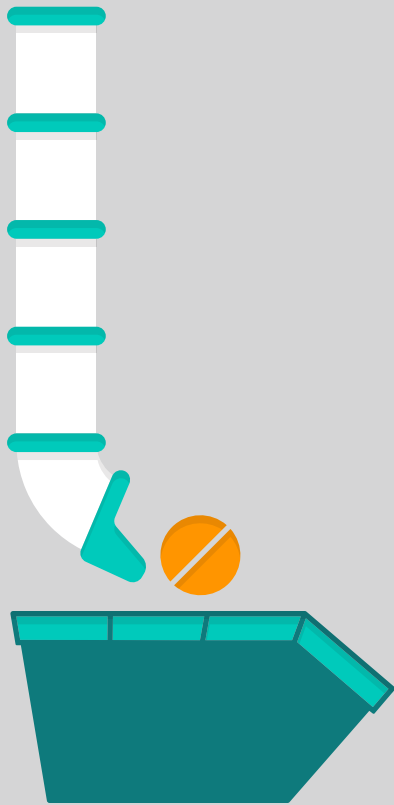
2017, by percent of prescriptions filled

| Rank | Therapy class | Drug name | % of prescriptions filled |
|------|-------------------------|---------------------------|---------------------------|
| 1 | NSAIDs | meloxicam | 10.8% |
| 2 | Muscle relaxant | cyclobenzaprine | 9.1% |
| 3 | Anticonvulsants | gabapentin | 6.5% |
| 4 | Narcotic analgesics | tramadol | 4.5% |
| 5 | Non-narcotic analgesics | Mapap® (acetaminophen) | 4.1% |
| 6 | Narcotic analgesics | tramadol extended release | 3.5% |
| 7 | NSAIDs | etodolac extended release | 3.3% |
| 8 | NSAIDs | naproxen | 3.1% |
| 9 | NSAIDs | ketoprofen | 3.0% |
| 10 | Ulcer drugs | omeprazole | 2.9% |

Reducing waste through channel optimization

Waste occurs when drugs are dispensed through a costlier channel than necessary with no incremental gain in health

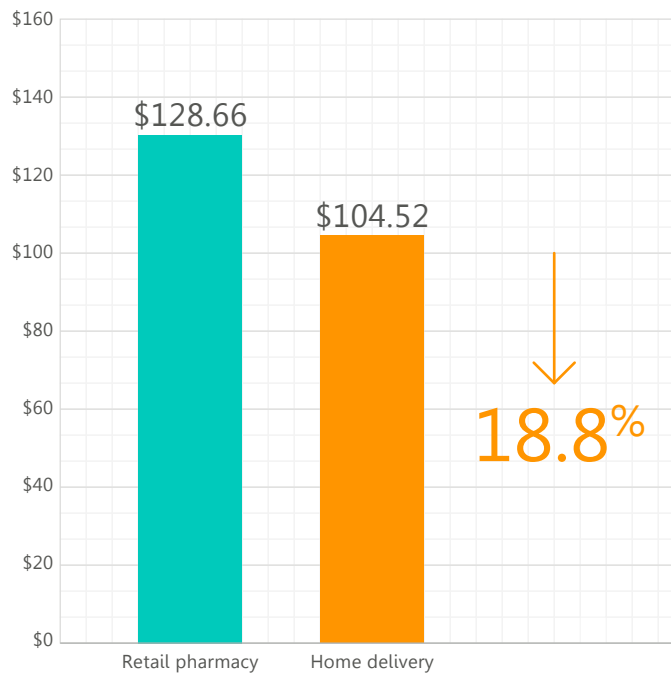
- Prescription drugs can be dispensed through several channels, including home delivery, retail and physicians' offices.
- Prescriptions billed through network pharmacies cost 13.6% less than those processed through third-party billers.
- Prescriptions processed by third-party billers create an additional administrative burden, as well as higher prescription-drug costs.



18.8%
lower cost for
prescriptions filled
through home
delivery vs. retail
pharmacies

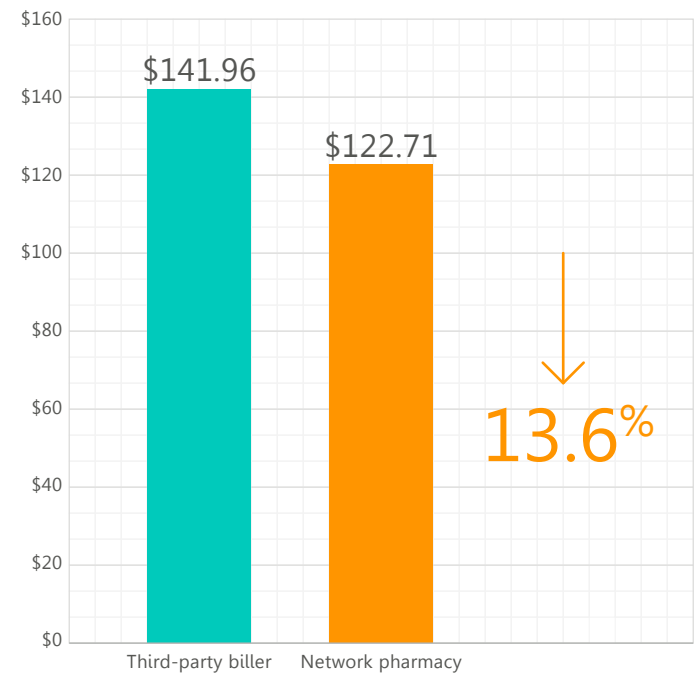
AVERAGE COST PER ADJUSTED RX

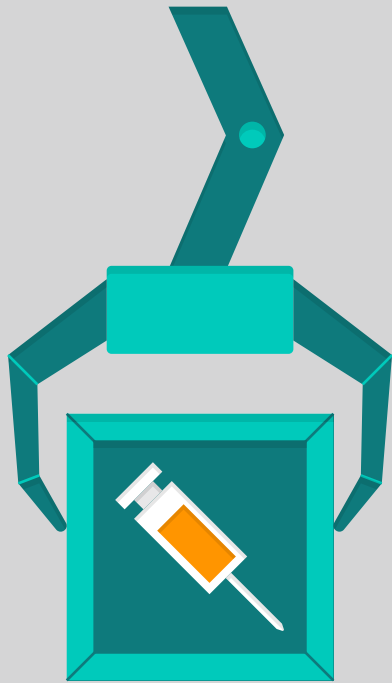
2017, retail vs. home delivery



AVERAGE COST PER ADJUSTED RX

2017, third-party biller vs. network pharmacy





3.8%

increase in specialty
medication spending
for injured workers

Managing the rising use of specialty therapies

Specialty drug utilization increased slightly in 2017, but remained **less than 1%** of prescriptions filled by injured workers

- In 2017, 2.1% of injured workers used a specialty drug, which accounted for 0.6% of all prescriptions filled and 6.3% of total pharmacy spend for workers' compensation payers.
- Use of medications to treat HIV increased 17.6% in 2017.
 - Payers who have injured workers with occupational exposure to needle-sticks often include HIV medications on their formulary to ensure quick access to work-related HIV prophylaxis therapy.
 - Truvada® (emtricitabine/tenofovir disoproxil fumarate) and Isentress® (raltegravir) account for 75.1% of market share.
 - Generics for some of the older, single-drug HIV medications launched in late 2017 and early 2018. Others, such as Norvir® (ritonavir) and Viread® (tenofovir disoproxil fumarate), are scheduled to lose patent protection in 2018.
 - Newer medications like Juluca® (dolutegravir/rilpivirine), which was approved in November 2017, contain multiple drugs and offer once-daily dosing.
- Osteoarthritis drugs increased 21.6% in utilization and 1.1% in cost per prescription in 2017. Workers may use these medications for repetitive stress injuries due to occupational activities that stress the knee joint, such as squatting, kneeling or lifting heavy objects.
- The newer hepatitis C drug, Epclusa® (velpatasvir/sofosbuvir), replaced Harvoni® (ledipasvir/sofosbuvir) in the top 10 medications for 2017, ranked by PUPY spend.
- Repatha® (evolocumab), an injectable specialty medication used to treat high cholesterol, entered the top 10 drugs in 2017 with an average cost per Rx of \$1,123.90, driving total trend for the class into triple-digits.

Mapping out government regulations

Legislative and regulatory activity continued to increase in 2017

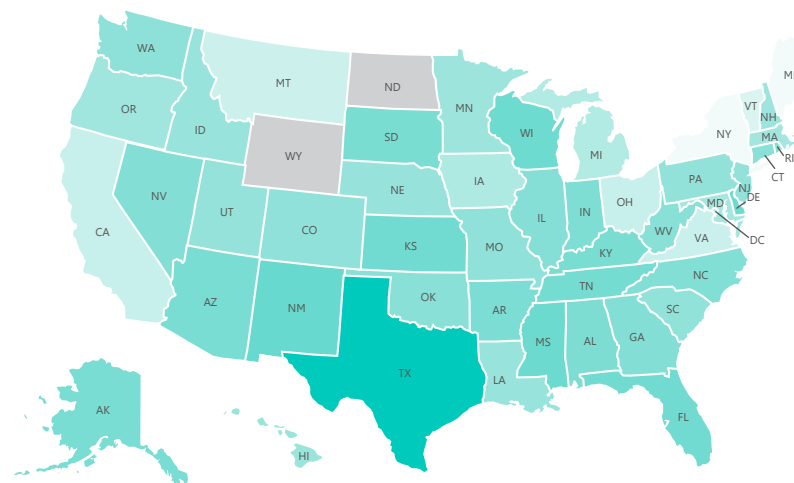
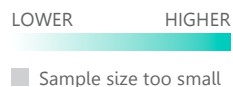
- Many states focused on the opioid crisis facing our nation and have taken, or are considering, a multifaceted approach to address this epidemic. Their measures include adoption of regulatory language around implementation of a state-specific drug formulary, implementation of opioid guidelines, initial day supply limitations and/or a daily cap on MED with the injured workers' safety as the goal.
- Many states responded to the Centers for Disease Control (CDC) warning related to the risk that long-term use or misuse of opioids increases with the number of days' supply and MED levels. They enacted limitations on initial fills of opioids and encouraged the use of other medications and alternative treatment strategies.
- While a number of states adopted a state-specific formulary or have a preferred drug list, legislative and regulatory activities will continue as states consider the varying approaches or modify what has already been adopted.
 - Recent activity: California implemented a state formulary on Jan. 1, 2018, and Arkansas will launch one on July 1, 2018. Other states are finalizing their drug formulary regulatory language.
 - Several states have implemented or are considering adopting rules that may require prior authorization for all compounded medications and/or may limit physician dispensing. These maps provide a snapshot of the steps taken by states to address pharmacy-related challenges in workers' compensation, specifically formulary and opioids.

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5 Shah A, Hayes CJ, Martin BC. Characteristics of Initial Prescription Episodes and Likelihood of Long-Term Opioid Use — United States, 2006–2015. MMWR Morb Mortal Wkly Rep 2017;66:265–269. Available from: <http://dx.doi.org/10.15585/mmwr.mm6610a1>. Last updated 1 Aug 2017. Accessed 29 Jan 2018

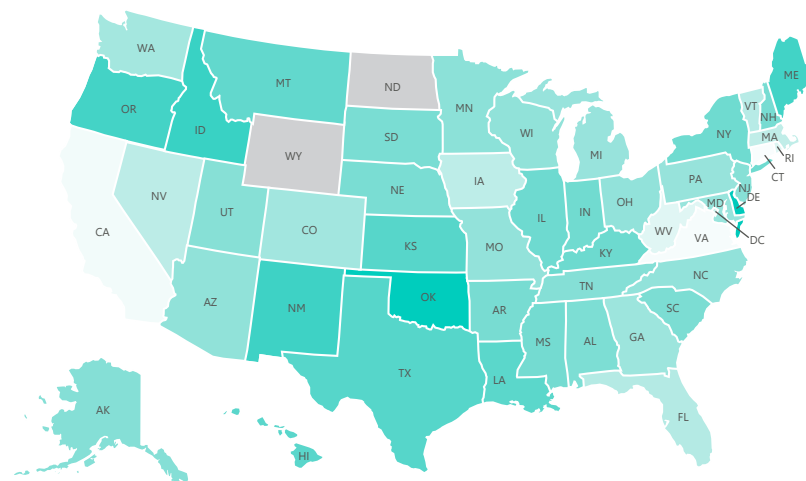
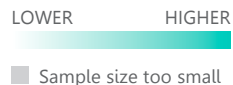
PERCENT OF PRESCRIPTIONS ON FORMULARY

2017, by state



PERCENT OF PRESCRIPTIONS FOR OPIOIDS

2017, by state

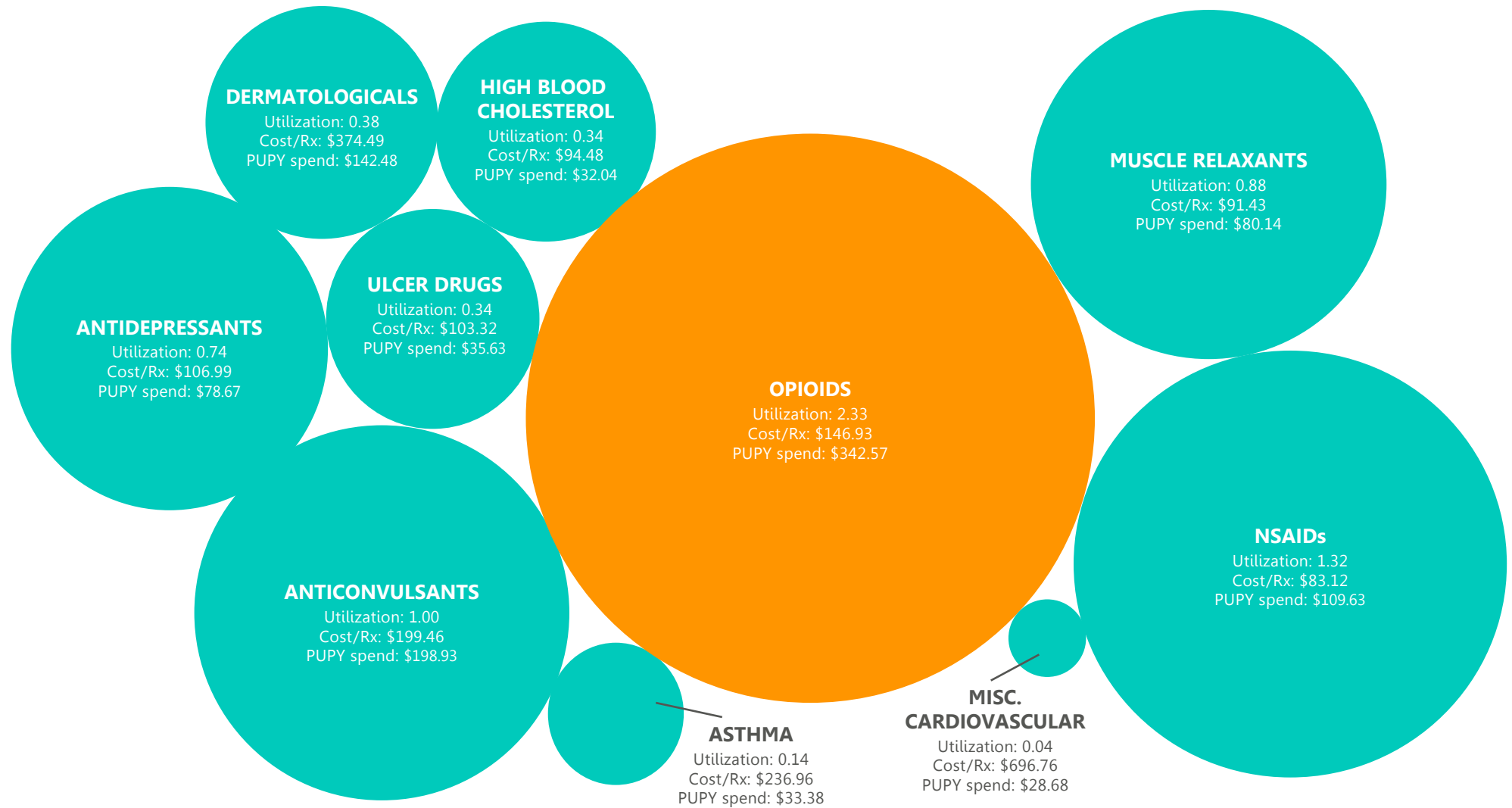


Top 10 therapy classes and insights

The top 10 therapy classes accounted for 76.1% of total workers' compensation drug spending in 2017

UTILIZATION BY THERAPY CLASS

2017, by utilization (number of Rx PUPY)



Looking forward

What's in the drug pipeline for 2018 and beyond?

TOP DRUGS SCHEDULED TO LOSE PATENT PROTECTION

2018-2021

| NAME | INDICATION | SCHEDULED RELEASE YEAR |
|--|-----------------------------------|------------------------|
| Flector® (diclofenac epolamine) patch | Pain/inflammation | 2018 |
| Cialis® (tadalafil) | Erectile dysfunction | 2018 |
| Advair Diskus® (fluticasone propionate/salmeterol) | Asthma | 2018 |
| Lyrica® (pregabalin) | Pain/inflammation | 2019 |
| Ranexa® (ranolazine) | Heart disease | 2019 |
| Hysingla® ER (hydrocodone) | Pain/inflammation | 2019 |
| Truvada® (emtricitabine/tenofovir disoproxil fumarate) | HIV | 2021 |
| Amitiza® (lubiprostone) | GI disorders | 2021 |
| Bystolic® (nebivolol) | High blood pressure/heart disease | 2021 |
| Pradaxa® (dabigatran) | Anticoagulants | 2021 |

While some of these drugs are not typically used in workers' compensation programs, payers with certain patient populations may deem them related to an occupational injury.

PIPELINE DRUGS TO WATCH

Two products of interest to worker's compensation payers have already been approved in 2018: Apadaz™ (benzhydrocodone/acetaminophen) is an opioid combination pain drug that has unique anti-abuse properties. ZTlido™ (lidocaine) is a lidocaine patch indicated to treat postherpetic neuralgia, the pain that lingers after shingles; ZTlido is bioequivalent to currently available lidocaine patches, such as Lidoderm® (lidocaine) Patch 5%. Other investigational drugs that may be close to marketing and that may impact worker's compensation clients include:

| CONDITION | DRUG NAME | NOTES | EXPECTED FDA APPROVAL |
|--|--|--|-----------------------|
| HIV | fostemsavir | First in a new class, gp120 attachment inhibitors; Oral | 2018 |
| Moderate-to-severe acute postoperative pain | Olinvo™ (oliceridine) | Non-opioid for first-line treatment; IV | 2018 |
| Pain/hypertension | Consensi™ (celecoxib/amlodipine) | NSAID/calcium channel blocker; oral | 2018 |
| Migraine prevention | Aimovig™ (erenumab) fremanezumab galcanezumab eptinezumab | monoclonal calcitonin gene-related peptide (CGRP) receptor antagonist monoclonal antibodies; SC/IV/oral | 2018/2019 |
| Major depressive disorder/treatment-resistant depression | esketamine | NMDA receptor modulator ; IV/intranasal | 2019 |
| Migraine treatment | lasmiditan | First serotonin 1F receptor agonist "ditan", similar to triptans; oral | 2019 |
| Post-operative pain | Xaracoll® (bupivacaine collagen-matrix) | non-opioid drug/device combination; implant | 2020 |



Methodology

In calculating trend, prescription drug use was considered for payers with a stable injured-worker base, defined as having a change in user volume of less than 50% from 2016 to 2017.

Nonprescription medications and prescriptions that were dispensed in hospitals, long-term care facilities and other institutional settings were not included in our analysis.

Utilization, determined on a per-user-per-year (PUPY) basis, was calculated by dividing the total number of 30-day adjusted prescriptions by the total number of users in a year.

Market share was determined by calculating the percentage of total 30-day adjusted prescriptions represented by one medication.

Prescription drug costs were calculated by adding together ingredient cost, taxes, administrative fees and dispensing fees.

2017 Drug Trend Report

Learn more about our Workers' Compensation solutions at: myMatrixx.com

View the 2017 Drug Trend Report for commercial payers and more at: express-scripts.com/corporate

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