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Opioid Prescriptions among Patients Receiving Workers' Compensation

In 2016, in response to concerns about increases in opioid addiction and deaths, CDC issued guidelines about the use of opioids for chronic non-cancer related pain.[1] In the United States, prescription rates for opioids peaked in 2012 and decreased 44% by 2020.[2] A similar trend was seen in Michigan where the opioid dispensing rate decreased from 100.7 per 100 persons in 2012 to 54.4 per 100 persons in 2020.[2] In 2020, Michigan had the 12th highest opioid dispensing rate in the United States,[3] and in 2019, with 2,385 deaths, the 21st highest rate of drug overdose deaths.[4] In 2019, the number of opioid prescription related overdose deaths in Michigan was 454, which was decreased from 678 in 2016.[5] However, in 2020, opioid overdose deaths in Michigan increased 16.2 %.[6]

In 2018, Michigan began to require a provider writing an opioid prescription to obtain a signature on the Start Talking Consent Form; obtain and review a Michigan Automated Prescription System (MAPS) report for any patient before prescribing a controlled substance for a quantity greater than three days; provide follow-up care or referral to another provider to monitor the efficacy of the controlled substance in treating the patient's condition; prescribe no more than a seven day supply of an opioid to patients being treated for acute pain; and discuss the dangers of opioid addiction, how to dispose of an expired, unused controlled substance, Michigan laws involving delivery of a controlled substance, as well as the short term and long-term effects of exposing a fetus to an opioid.[7]

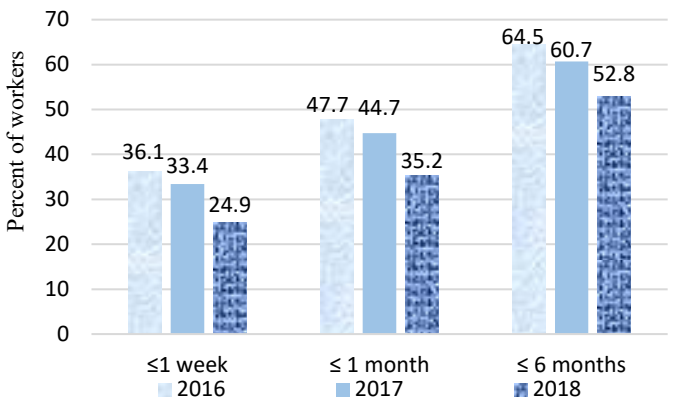
In June 2015, specific regulations related to workers' compensation reimbursement for opioids beyond 90 days began to require a written report every 90 days that included: (a) A review and analysis of the relevant prior medical history and MAPS; (b) A summary of conservative care rendered to the worker that focused on increased function and return to work; (c) A statement on why prior or alternative conservative measures were ineffective or contraindicated; (d) A statement that the attending physician has considered the results obtained from appropriate industry accepted screening tools to detect factors that may significantly increase the risk of abuse; (e) A treatment plan every 6 months that includes: (i) Overall treatment goals and functional progress; (ii) Periodic urine drug screens; (iii) An effort to reduce pain through the use of non-opioid medications, alternative non-pharmaceutical strategies, or both; (iv) Consideration of weaning the injured worker from opioid use; and (f) Every six months an opioid treatment agreement signed by the worker/patient and the doctor.

To address opioid prescriptions in workers receiving workers' compensation (WC) in Michigan, individuals who received WC for wage replacement (off work seven or more days in a row) or had a work-related amputation in 2016, 2017 or 2018 were matched with the MAPS data for all dispensed and prescribed controlled substances (DEA schedule 2-5 drugs) from 2003 through September 2020. To ensure confidentiality the MAPS contractor performed the data linkage steps and removed all patient-level identifiers from the linked dataset prior to transferring the data back to MSU for analysis.

Results

The number of workers with a paid WC claim in 2016, 2017 and 2018 and the number and percent with an opioid prescription within one week, one month and six months after the injury are shown in Figure 1.

Figure 1. Percent of workers who received an opioid prescription within 1 week, 1 month and 6 months of an injury for which they received a paid wage replacement or amputation WC claim, by year from 2016-2018 (n=46,934)



There was a downward trend in opioid prescription over the three years for all three periods after an injury ($p<0.001$). The maximum but not the median MME decreased over the three years. The duration of the prescription also decreased over the three years (Table 1).

Table 1. Average, maximum and median morphine milligram equivalent (MME) and duration of opioid prescriptions within 6-months of an injury by year from 2016-2018 (n=46,934)

Variable	Year	Mean	Maximum	Median
MME	2016	8.71	2495.79	5.71
	2017	9.15	1974.31	5.56
	2018	8.49	581.06	5.36
Duration (Days)	2016	632.9	1725	532
	2017	441.87	1669	271
	2018	266.04	1675	84

We are only aware of one other state, Tennessee, where the state-wide prescription monitoring data were matched with WC data.[8] The percentage of individuals on WC in Tennessee for the years 2013-2015 who received an opioid prescription was 21.7-23.4% at one week, 28.4-30.7% at one month and 31.8-34.3% at six months. The percentage of injured workers in Tennessee receiving opioid prescriptions was lower despite the fact that the overall opioid prescription rate in Tennessee is 27% greater than in Michigan.[2] Prescription rate data among WC recipients was 19.2% in Ohio, 42% in Washington and 46.4% in Louisiana at one year. The data from these latter three states only reported prescriptions paid for by WC and probably underrepresents the true prescription rate reported by Tennessee and Michigan, which reported the prescription rate from all providers to the injured worker.

Prescription patterns in Michigan showed that men and older workers were more likely to receive an opioid prescription ($p<0.001$) (Table 2).

Table 2. Age and gender of workers with a paid wage replacement or amputation WC claim, with an opioid prescription within 6-months of an injury, 2016-2018 combined (n=45,934)

	Opioid prescription		
	No (n=19,135)	Yes (n=27,799)	% with Opioid prescription
Age, mean (SD)	43.1 (13.8)	46.0 (13.1)	
Age, years	#	#	%
15-34	5,992	6,295	51.2
35-54	8,383	13,030	60.9
≥55	4,632	8,474	64.7
Gender			
Female	7,813	9,586	55.1
Male	11,291	18,163	61.7

Workers in Mining, Construction, Manufacturing, and Agriculture/Forestry/Fishing had the highest percentage of claims where opioids were prescribed. Public Safety, and Transportation, which have special rules about working and the use of opioids had the lowest prescription rates ($p<0.001$) (Table 4). Construction had the highest average MME while Healthcare/Social Assistance and Mining had the highest average duration of opioid prescriptions (Table 4).

Those with more severe injuries (e.g., Amputations and Fracture/Dislocations) were more likely to receive an opioid prescription while workers with Concussions and Diseases were least likely to receive an opioid prescription ($p<0.001$) (Table 3). Burns and Concussions had the highest average MME while Back Sprains/Strains and Concussions had the highest average duration of opioid prescriptions (Table 3).

Table 3. Percent with opioid prescription, average/max/median MME and duration of opioid prescriptions by injury of paid wage replacement or amputation WC claims, with an opioid prescription within 6 months of an injury, 2016-2018.

Injury Type	% with Opioid prescription	MME			Duration (Days)		
		Avg.	Max	Median	Avg.	Max	Median
Amputations	83.5	9.8	211.8	5.8	321	1,634	
Abrasions/Lacerations/Bites	62.4	8.1	245.9	5	335	1,712	36
Crush/Contusions	54.8	8.7	461.3	5.5	495	1,724	337
Fracture/Dislocations	72.6	9.4	2,495.8	5.6	395	1,722	141
All - Sprains/Strains/Hernias/Inflam. Nerves	50.6	9.8	1,713.5	5.4	485	1,710	347
Sprains and Strains - Back	48.6	8.3	240	5.2	544	1,716	456
Sprains and Strains - Shoulder	64.5	8.3	418.3	6.3	493	1,708	341
Sprains and Strains - Knee	62.2	7.3	240	5.5	444	1,725	232
Sprains and Strains - Arm/Hand	56.4	7.7	310.4	5.6	491	1,696	350
Burns-Chemical/Heat/Electrical	51.1	12.1	1,885.2	5.6	363	1,702	42
Concussions	38.8	11.1	358.4	5	562	1,687	474
Diseases	31.7	6.2	36.5	5	499	1,564	361
Misc ill-Defined injuries	58.8	8.7	448.7	5.6	486	1,711	317

Table 4. Average, max and median MME and duration of opioid prescriptions by industry of paid wage replacement or amputation WC claims, with an opioid prescription within 6 months of an injury, 2016-2018 combined.							
Industry Type	**% with Opioid prescription**	**MME**			**Duration (Days)**		
		Avg.	**Max**	**Median**	**Avg.**	**Max**	**Median**
Agriculture/Forestry/Fishing	65.5	9.4	279.2	5.0	336	1,701	82
Construction	67.1	11.4	2,495.8	6.1	397	1,699	152
Public Safety	49.0	9.0	237.0	5.6	499	1,698	385
Healthcare & Social Assistance	54.5	8.1	756.9	5.3	543	1,708	463
Manufacturing	65.6	9.0	1,713.5	5.6	441	1,724	223
Oil & Gas Extraction	55.2	6.4	9.7	6.0	406	1,506	381
Mining	71.4	7.7	33.8	6.3	546	1,497	428
Services	57.3	8.6	1,974.3	5.6	458	1,722	271
Transp./Wholesale & Utilities	51.4	7.7	240.0	5.7	482	1,708	311
Wholesale/Retail Trade	59.2	8.3	240.0	5.5	426	1,725	212
Other	51.2	21.2	233.9	5.5	421	1,126	300

The opioid prescription rate for injured workers for 2016, 2017 and 2018, which was 64.5/100, 60.7/100 and 52.8/100 respectively was lower than the overall prescription rate in the state, which was 84.9/100, 75.5/100 and 62.7/100. Both work and non-work-related opioid prescription rates showed a decrease over the three years. Over the three years, there was no decrease in the MMEs while there was a decrease in the duration in the days of an opioid prescription. This decrease in duration is consistent with the 2015 WC/opioid regulations that require certain actions if opioid use is continued greater than 90 days. Further analyses are underway to understand what other factors are associated with opioid prescriptions among individuals with work-related injuries.

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*PS Remember to report all cases of occupational disease!

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