

Economic Costs of the Opioid Crisis for Employers

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According to a 2017 survey conducted by the National Safety Council, 71% of employers in the United States reported having been affected in some way by employee use of prescription drugs, primarily through absenteeism or impaired work performance.¹ The economic costs (both direct and indirect) of nonmedical opioid use are substantial to U.S. employers, not only due to lost productivity but also due to increased health care expenditures, greater costs for workers' compensation and disability claims, and difficulty meeting recruitment or production targets in regions that experience shortages of healthy workers.

In a recent Society of Actuaries (SOA) report authored by Milliman (including the authors of this article), the total economic cost of the opioid crisis was estimated to exceed \$631 billion from 2015 to 2018. Much of this cost was borne by employers, many of which offer health and disability benefits that individuals with opioid use disorder (OUD) rely on. Employers in turn rely on a healthy workforce in order to operate their businesses.

Within this estimate, lost productivity costs due to absenteeism and decreases in labor force participation resulting from nonmedical opioid use were found to total at least \$79 billion from 2015 to 2018.² Excess health care costs for commercially insured patients impacted by OUD, a large portion of which are borne by employers, totaled \$67 billion over the same time frame. Substantial employer costs also were associated with disability and workers' compensation claims, which totaled \$3.4 billion from 2015 to 2018. Together, these

costs add up to nearly \$150 billion across four years. When considering other types of opioid crisis-related costs that are more difficult to measure, the total cost may be substantially higher. This article discusses key findings of this report as they relate to employers.

Many employers are partnering with their pharmacy benefit managers (PBMs), health plans, treatment providers and other community resources to address nonmedical opioid use and related substance use disorders.³ Strategies such as employee assistance and treatment programs, employee education and modifications to health plan benefit designs can be applied to help mitigate the effects of the opioid crisis on the U.S. workforce.

AT A GLANCE

- The total economic cost of the opioid crisis in the United States was estimated to exceed \$631 billion from 2015 to 2018.
- Employer costs include increased spending on health care, lost productivity, and increased disability and workers' compensation claims and are estimated to total nearly \$150 billion from 2015 to 2018.
- Employers aiming to improve the health of their employees or to better manage their financial risks associated with the opioid crisis should consider strategies that encompass both preventive measures as well as supportive measures to help those experiencing OUD to better manage their conditions and move toward recovery.

Lost Productivity

Productivity losses result from reductions in economically productive activity for workers with nonmedical opioid use. Some of this lost productivity takes the form of increased absenteeism for employees with OUD (directly impacting their employers). Some takes the form of reduced labor force participation when individuals with OUD are not able to maintain employment (indirectly impacting employers through a reduction in the healthy workforce). The costs associated with these productivity losses are a function of the prevalence of OUD, typical levels of economic productivity for healthy individuals and the degree to which productivity is decreased for individuals with OUD.

We used several large administrative health care claims databases to develop estimates for the prevalence of OUD across the U.S. and found that nearly 2.3 million nondisabled individuals may have experienced OUD in 2015, increasing to nearly 3.1 million individuals by 2018.⁴ Economic productivity varies by age and sex, but a majority of these individuals fell between the ages of 25 and 54, which is when individuals typically have highest economic productivity.^{5,6} Estimates from prior research suggest that individuals with OUD experience 17-18% reductions in economic productivity.⁷ Considering these figures together, we estimate that individuals with OUD experienced productivity losses of \$16.7 billion in 2015, increasing to \$21.9 billion by 2018, or about \$78.6 billion across the four-year time period. Table I provides

TABLE I

Estimated Lost Productivity Costs Due to Nonmedical Opioid Use, 2015-2018

Year	Individuals With OUD	Total Annual Productivity (Millions)	Productivity Lost to Nonmedical Opioid Use (Millions)
2015	2,267,693	\$96,685	\$16,719
2016	2,761,680	\$111,862	\$19,356
2017	2,937,889	\$119,739	\$20,717
2018	3,066,771	\$126,297	\$21,852

these results for each year from 2015 to 2018.

In the surveys that were used to develop key assumptions, it is likely that these estimates are slightly understated to the extent that individuals may underreport loss of productivity due to substance use. These estimates do not include *presenteeism*, which is defined as a reduction in productivity for employees working while not in good health. Further, prevalence of nonmedical opioid use was estimated based on diagnoses of opioid abuse, dependence or poisoning in medical claims data, and it is likely that additional costs exist for those with nonmedical opioid use that has not been identified in health care settings.

Disability and Workers' Compensation Costs

In addition to reductions in productivity, employers also face increased costs from short- and long-term disability claims as well as increased workers' compensation costs for employees with OUD.⁸ Short- and long-term disabil-

ity insurance programs provide partial wage replacement for employees unable to work due to qualifying injuries or illnesses. In order to estimate the costs to employers associated with these benefits, we compared costs between employees with OUD and otherwise similar employees without OUD.

We leveraged large research databases containing linked health care, disability and workers' compensation claims data for individuals with employer-sponsored insurance and estimated that nearly 700,000 employees may have experienced OUD in 2015, increasing to more than 850,000 by 2018. In 2018, employees with OUD cost on average \$1,251 more in short-term disability, \$135 more in long-term disability and \$622 more in workers' compensation claims compared with otherwise similar employees without OUD.⁹ Across the entire benefit-eligible population in the U.S., total costs to employers for these benefits added up to \$702 million in 2015, increasing to \$955 million in 2018, or a total of \$3.4

TABLE II**Additional Disability and Workers' Compensation Costs for Employees With Nonmedical Opioid Use, 2015-2018**

Year	Prevalence of OUD		Percentage of Employees With Benefit	Benefit-Eligible Employees With OUD	Additional Costs for Employees With OUD	
	Per 1,000 Employees	Total			Per Employee	Total (Millions)
Short-Term Disability						
2015	4.55	672,191	39%	262,155	\$1,190	\$312
2016	5.27	789,773	39%	308,012	\$1,208	\$372
2017	5.38	818,154	39%	319,080	\$1,233	\$393
2018	5.58	854,484	39%	333,249	\$1,251	\$417
Long-Term Disability						
2015	4.55	672,191	33%	221,823	\$128	\$28
2016	5.27	789,773	33%	260,625	\$130	\$34
2017	5.38	818,154	33%	269,991	\$133	\$36
2018	5.58	854,484	33%	281,980	\$135	\$38
Workers' Compensation						
2015	4.55	672,191	94%	631,860	\$573	\$362
2016	5.27	789,773	94%	742,387	\$595	\$442
2017	5.38	818,154	94%	769,064	\$610	\$470
2018	5.58	854,484	94%	803,215	\$622	\$500

billion across the four-year time period. Table II provides these results for each year from 2015 through 2018.

These estimates do not reflect any additional costs incurred by employers that needed to retain other staff to fill roles or responsibilities that employees with OUD could not fulfill due to their disabilities or injuries, and thus may be understated.

Health Care Costs

In addition to disability and workers' compensation costs, employers that

sponsor health insurance plans also bear much of the burden of health care costs for their employees and dependents. Studies have shown that individuals with OUD have more complex health care needs than those without, as well as lower reported physical and mental qualities of life.^{10,11} Those with OUD incur health care costs not only from the direct treatment of OUD but also from increased use of all types of health care services (including both physical health and behavioral health services in inpatient, outpatient and

professional settings). Similar to our estimates of disability and workers' compensation costs, we estimated the additional health care costs associated with OUD by comparing health care costs between patients with OUD and otherwise similar patients without OUD.

Again, using large national research databases containing administrative health care claims data, we estimate that more than 600,000 commercially insured individuals had OUD in 2015, increasing to more than 800,000 individuals by 2018. Nationwide, individu-

als with OUD experienced an average of more than \$22,000 in additional health care costs compared with otherwise similar individuals without OUD. Across the entire commercially insured population, we estimate that these excess health care costs exceeded \$12.5 billion in 2015, increasing to nearly \$17.9 billion by 2018, or about \$63 billion across the four-year time period. Table III provides these results for each year from 2015 through 2018.

Over the time period studied, both the total number of individuals with OUD and the average cost per individual increased. A significant portion of this \$63 billion burden fell on employers, in the form of increased premiums (for fully insured plans) or increased liabilities (for self-funded plans).

The impact of nonmedical opioid use also extends beyond the patient to family members of individuals with diagnosed OUD. We compared health care costs between individuals with a family member diagnosed with OUD and otherwise similar individuals without a family member with OUD. We found that more than 960,000 individuals with commercial insurance coverage may have had a family member with OUD in 2015, increasing to nearly 1.3 million individuals by 2018. These individuals experienced health care costs that were about 20% higher than those of otherwise similar individuals who did not have a family member with OUD, or about \$829 in excess costs per individual in 2018. Across the U.S., we estimate that this led to an additional \$727 million in health care costs in 2015, increasing to more than \$1 billion by 2018, or about

TABLE III

Additional Commercial Health Care Costs for Individuals With Diagnosed Opioid Use Disorder (OUD), 2015-2018

Year	Prevalence of OUD		Additional Costs for Individuals With OUD	
	Per 1,000	Total	Per Individual	Total (Millions)
2015	3.49	608,701	\$20,612	\$12,547
2016	4.20	738,350	\$21,346	\$15,761
2017	4.36	770,751	\$21,771	\$16,780
2018	4.52	805,372	\$22,185	\$17,867

TABLE IV

Additional Commercial Health Care Costs for Patients With a Family Member Diagnosed With Opioid Use Disorder (OUD), 2015-2018

Year	Individuals With a Family Member Diagnosed With OUD	Additional Costs	
		Per Individual	Total (Millions)
	Total		
2015	962,039	\$756	\$727
2016	1,165,659	\$785	\$915
2017	1,216,454	\$814	\$990
2018	1,271,096	\$829	\$1,054

\$3.7 billion across the four-year time period. Table IV provides these results for each year from 2015 through 2018.

The largest relative increase in costs for this population was for substance use disorder treatment services, which suggests that other nonopioid-related substance use disorders may be more common in households where a family member has OUD compared with those without.

Employer Considerations

Employers aiming to improve the health of their employees or to better manage their financial risks associated with the opioid crisis should consider strategies that encompass both preventive measures for those not yet experiencing complicated opioid use as well as supportive measures to help those already experiencing OUD to better manage their conditions and move to-

TABLE V**National Estimates of the Number of Opioid Use Disorder (OUD) Patients and Long-Term Opioid Users Exceeding Key Opioid Use Thresholds, 2015**

	Patients With OUD	Long-Term Opioid Users Not Diagnosed With OUD
Patients treated for 360+ days	161,000	858,000
Treated with high-potency opioids	29,000	257,000
High opioid coverage	235,000	1,782,000

ward recovery. While those who have already been diagnosed with OUD may be relatively easy to identify for outreach and enhanced care using health care claims data, those at increased risk for developing OUD in the future can be harder to identify.

In a 2018 Milliman study, we compared prescription opioid use patterns between individuals with diagnosed OUD versus those who filled opioid prescriptions in similar quantities, frequencies or potencies but who had not been diagnosed with OUD (referred to as *long-term opioid users*).¹² In a study of a commercially insured population (predominately comprised of individuals with employer-sponsored insurance) we found that long-term opioid users outnumbered those with diagnosed OUD by factors of six to nine, depending on the chosen opioid use threshold. These findings suggest that the number of individuals already diagnosed with OUD may be the tip of an iceberg relative to the overall risks posed by high opioid use within any given population.

Table V shows our national estimates for the number of commercially

insured patients who exceeded key opioid use thresholds in 2015. This table shows:

- The number of patients prescribed high quantities of opioids (at least a 360-day supply, equivalent to 12 30-day prescriptions in a year)
- Patients treated with high-potency opioids—an average of more than 200 morphine milligram equivalents (MME) per day—which is well in excess of the Centers for Disease Control and Prevention (CDC) guideline to avoid prescribing more than 90 MME per day without careful consideration
- Patients with high opioid coverage over the course of a year (over 75% of their insurance eligibility covered by an opioid prescription in 2015).

As illustrated in Table V, a significant number of individuals without diagnosed OUD consume the same elevated level of opioids as those with a diagnosed OUD. These levels of opioid use may be clinically justified

in some circumstances and, in some cases, inappropriate or forced tapering can also be harmful to patients, but CDC recommends carefully assessing the evidence of individual benefits and risks when prescribing opioids. Individual decisions should be determined by patients and their care providers.

A range of screening tools and analytical approaches are available or under development to aid in the process of identifying at-risk individuals. Employers looking to understand the prevalence of opioid use issues in their populations could analyze prescription drug claims for elevated opioid levels in addition to medical claims data. Employers have been using claims analysis to target prescriptions that fall outside of CDC guidelines and identify individuals who may be at risk of developing a use disorder.¹³ In addition, many employers are partnering with their PBMs and health plans to address problematic use of prescription opioids.

Following are some strategies suggested by the National Business Group on Health.

1. Encourage use of employee assistance programs for treatment and help returning to work.
2. Educate employees about how to seek alternative pain management strategies, properly dispose of unused pills and identify signs of drug addiction.
3. Consider benefit design strategies, such as:
 - a. Implementing CDC guidelines for opioid prescriptions

- b. Limiting the number and potency of opioid prescriptions that can be prescribed
- c. Establishing prescription drug formularies that encourage use of nonopioid pain medication
- d. Creating benefit designs that encourage employees to use providers with opioid-reduction strategies.

It is important to note that opioid prescribing practices are a sensitive topic, since pressures to reduce prescriptions challenge the needs of chronic pain patients. Overprescribing opioids can lead to abuse and addiction, but limiting the prescriptions available to chronic pain patients can leave those patients feeling abandoned by the health care system. In some cases, it may exacerbate a shift toward illicit opioid use, which can be far more dangerous. Reducing the number of opioid prescriptions may be one component of the national strategy in addressing the opioid epidemic, but access to comprehensive treatment options for both chronic pain and substance use disorders will be critical to ensure that patient needs are not left out of the discussion.

Conclusion

The opioid crisis in the U.S. has exacted a considerable human toll as it has developed in recent years, and those impacts are accompanied by significant economic costs. A considerable portion of the economic burden is borne by employers, many of which support their employees and dependents with health and disability benefits and, in turn, depend on a healthy workforce in order to maintain and grow their business operations.

In our 2019 report for SOA, we estimate that the opioid crisis cost \$150 billion in lost productivity and excess health and disability costs for those with employer-sponsored benefits from 2015 through 2018. These estimates understate the true cost to employers, since they do not include a number of other significant costs that are harder to measure, including presenteeism, difficulty hiring and retaining a sufficient workforce, or lost economic opportunities for businesses unable to meet demand for their services. Employers that work to better support their employees and dependents with OUD may have an opportunity to better manage their financial risks while improving the health of their populations. 

AUTHORS



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Endnotes

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6. Due to the intertwined nature of nonmedical opioid use and socioeconomic disadvantages, we have not attempted to adjust the economic productivity values for socioeconomic differences between those with and without OUD.

7. U.S. Department of Justice National Drug Intelligence Center (April 2011). *The Economic Impact of Illicit Drug Use on American Society*. Retrieved January 27, 2020 from www.justice.gov/archive/ndic/pubs44/44731/44731p.pdf.

8. This Includes ICD-9-CM codes beginning with 304.0, 304.7, 305.5, and 965.0 and ICD-10-CM codes beginning with F11, T40.0, T40.1, T40.2, and T40.3. The diagnosis codes used to identify opioid use disorder (OUD) include a range of severities, including some cases of uncomplicated use and some in remission. In addition, opioid poisoning doesn't always happen within the context of an OUD.

9. Individuals with OUD were matched compared against individuals without OUD who were of the same age and sex, who lived in the same

state, who had the same type of insurance coverage and who had similar health risk scores in a baseline time period.

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