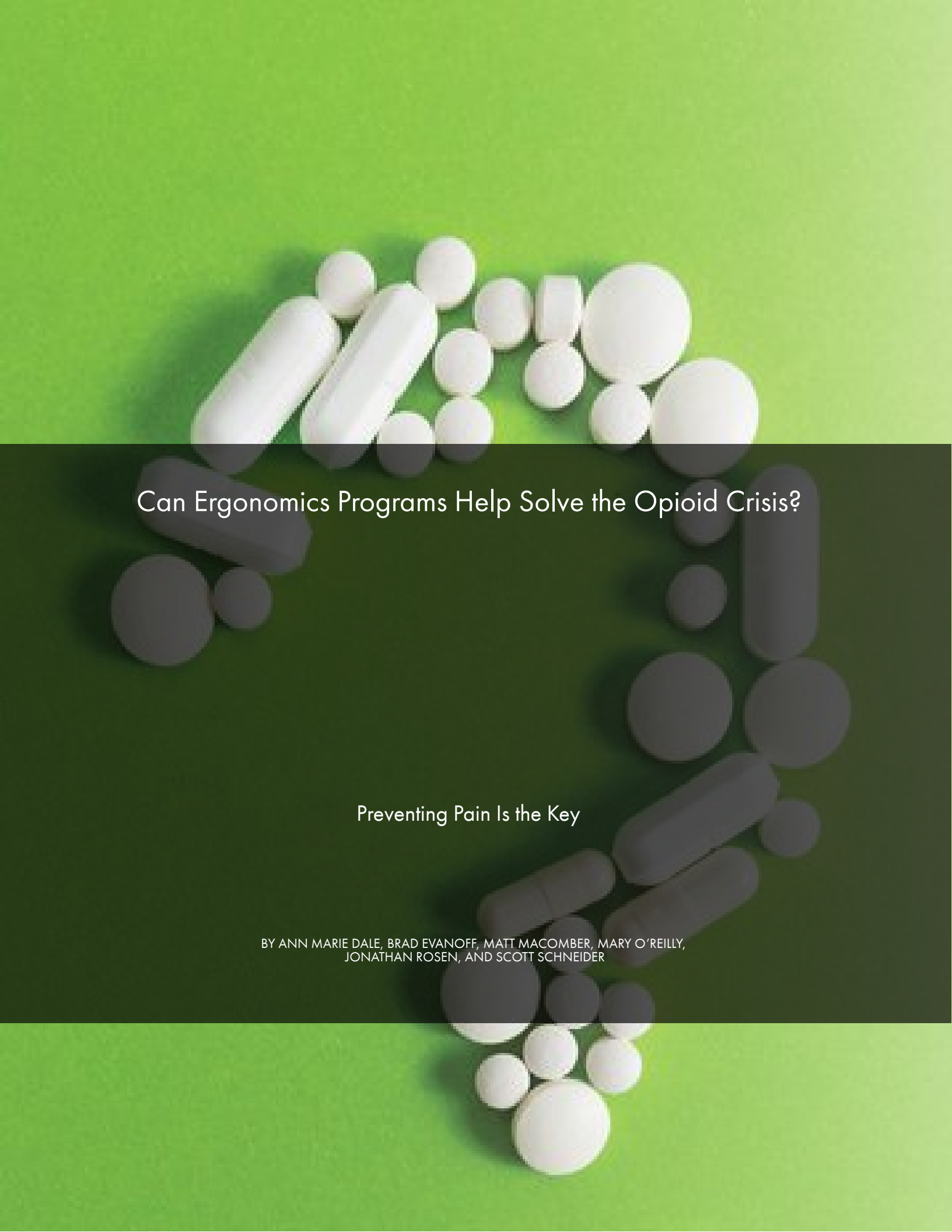


Can Ergonomics Programs Help Solve the Opioid Crisis?

Preventing Pain Is the Key

BY ANN MARIE DALE, BRAD EVANOFF, MATT MACOMBER, MARY O'REILLY, JONATHAN ROSEN, AND SCOTT SCHNEIDER

Much attention is being paid to the opioid crisis in the United States, and rightfully so. In 2017, opioid-related overdoses caused 47,600 deaths, an average of 130 every day. More than 2 million people have an opioid misuse disorder, with over a quarter of a million using heroin. The decline in life expectancy in the U.S. between 2014 and 2016 as reported by CDC is due at least in part to the opioid crisis. The tragedy reaches every one of us: mothers and fathers have lost children to opioids, grandparents are raising children who have lost parents, coworkers have lost friends, communities have lost neighbors. Each number related to the crisis represents a heart-wrenching web of loss that could have been avoided.

Most of the national response to the crisis focuses on preventing overdose deaths, on providing the best treatment for people with opioid addiction, and on changing prescription practices to prevent new cases of opioid overuse. AIHA and other organizations have also raised awareness about the dangers faced by emergency personnel who may be exposed to opioids while providing treatment. These efforts are necessary and important, but insufficient. We are never going to stop the influx of new opioid users only by changing prescription practices; we need to dig deeper and attack the roots of the problem.

OPIOIDS AND MUSCULOSKELETAL INJURIES

Although many factors have contributed to the opioid crisis, the role of workplace musculoskeletal injuries has been overlooked. The correlation between industries with high workplace injury rates and deaths from opioid overdoses is overwhelmingly supported by a review of several state workers' compensation systems, along with a NIOSH review of 21 states' illness and injury records published in CDC's *Morbidity and Mortality Weekly Report*.

Washington was one of the first states to recognize that injured workers were dying from opioid prescriptions. Many of these workers were prescribed opioids to relieve pain from back injuries or carpal tunnel syndrome. Washington developed guidelines, regulations, and education for providers that reduced opioid prescriptions and lowered the death toll from opioids by 27 percent between 2008 and 2012, as shown by a paper published in the *American Journal of Public Health*. But the number of work-related injuries remains high. Additional studies by Gary M. Franklin and colleagues, as described in the journal Spine, have revealed that opioid prescribing in Washington's workers' compensation system failed to reduce pain or help injured workers return to work.

OPIOIDS AND OCCUPATION

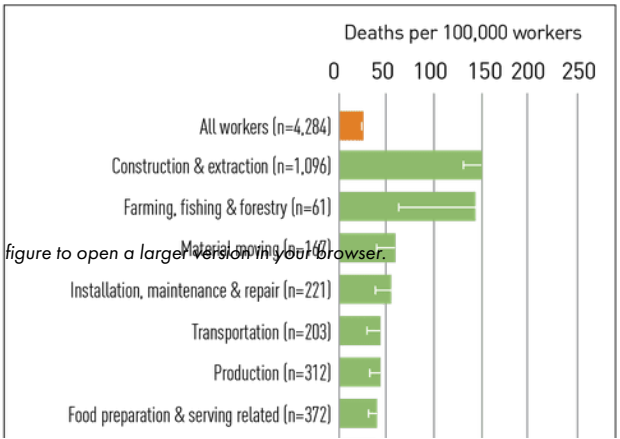
Several organizations and state agencies have compared opioid deaths and prescription rates across industries, with similar findings.

In December 2018, the Workers Compensation Research Institute released a study of over 1.4 million prescriptions filled for injured workers between October 2014 and September 2015 in 27 states. The study found that construction workers and miners were more likely than other workers to be prescribed opioids and to receive

prescriptions for longer periods of time. Workers with fractures, carpal tunnel syndrome, and neurological spine pain were more likely to get opioids and to be prescribed a longer course, as were workers over 40.

Massachusetts has also identified construction and mining as the industries with the highest death rates due to opioid use. In August 2018, the Massachusetts Department of Public Health published a study that categorized 4,302 opioid deaths by industry and occupation for the four-year period from 2011 through 2015 (see Figure 1). Twenty-four percent of the deaths were in construction and mining, which was six times the average opioid death rate for all workers in Massachusetts. Workers in the farming, fishing, and forestry sector had a rate five times higher than the national average. Other groups in Massachusetts that have significantly higher death rates from opioid overdoses include material moving, maintenance and repair, transportation, production, food preparation and serving, cleaning and maintenance, and healthcare. The percentage of workers in each occupational group who suffered a musculoskeletal injury is unknown, but the groups with the highest death rates from opioids all have high rates of musculoskeletal injuries.

Figure 1. Occupational Groups with Opioid Overdose Death Rates Significantly Higher Than the Average Rate for All Workers (Massachusetts Workers, 2011–2015)



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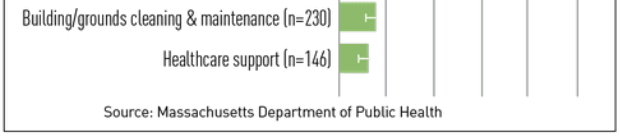

The Massachusetts study also showed that opioid death rates are significantly higher among workers in occupations with lower availability of paid sick leave and lower job security. This suggests that the need to return to work soon after an injury or to work while in pain may contribute to high rates of opioid-related overdose deaths among workers.

The NIOSH study published in *Morbidity and Mortality Weekly Report* evaluated data from 21 states in 26 occupational groups and identified 57,810 drug overdose deaths. The groups with the highest rates of death from opioid overdose were construction, extraction (for example, mining), food preparation and serving, healthcare, and personal care and service.

In Ohio, the state Bureau of Workers' Compensation evaluated its records to identify the percentage of injured workers prescribed narcotics between 2001 and 2016. In 2010, 82 percent of injured construction workers and 81 percent of injured transportation workers were prescribed narcotics. In 2016 those percentages had fallen to 73 percent of construction workers and 71 percent of transportation workers. In every year, the category with the lowest percentage of workers prescribed narcotics was people who worked in schools.

A less-recognized aspect of the opioid crisis is the number of overdose deaths that occur at work, which increased from 217 in 2016 to 272 in 2017. According to the U.S. Bureau of Labor Statistics, 2017 was the fifth consecutive year in which workplace overdose deaths increased by at least 25 percent.

THREE LEVELS OF PREVENTION

The opioid crisis is multi-factorial. Over-prescription, false advertising by pharmaceutical companies, misuse of prescription opioids, and progression from prescription opioids to heroin and fentanyl are elements of the crisis. But the evidence is overwhelming that occupational injury also plays a significant role. In addition, issues such as lack of sick days for workers and delays in diagnosis and treatment of musculoskeletal injury must be considered.

The efforts of occupational health practitioners can be supported by incorporating lessons learned from the public health community. The public health model includes primary, secondary, and tertiary approaches to prevention. Primary prevention includes interventions designed to prevent exposure. Secondary prevention occurs during the early stages of disease before onset of signs and symptoms. Tertiary prevention includes methods that aim to ameliorate the impact of disease once it has been established. Examples of the three approaches to prevention for occupational groups at high risk of opioid misuse appear in Table 1.

Table 1. Preventing Opioid Use, Misuse, and Overdose Among High-Risk Worker Groups

PRIMARY *Before pain, injury, and opioid use*	SECONDARY *Post-injury*	TERTIARY *Post substance-use disorder (SUD)*
Prevention of pain and injuries	Access to treatment and appropriate pain management	Access to SUD treatment and recovery support
Health and safety committees/programs	Paid sick leave	Employee Assistance Programs/peer support programs
	Return-to-work accommodations	Naloxone/training in the workplace
OPIOID AWARENESS Address cultural issues regarding help-seeking, stigma		

Source: Dr. Letitia Davis, Massachusetts Department of Public Health

Tap on the table to open a larger version in your browser.

Primary prevention focuses on strengthening workplace safety and health programs. The goal is to prevent injury and illness so fewer workers need medical care that includes pain treatment, which is a potential pathway to opioid misuse and addiction. For example, safe patient handling programs in healthcare could reduce back injuries that are epidemic among nurses and nurses' aides. Industrial hygienists are well situated to lead efforts to evaluate and control the relevant occupational hazards. Providing paid sick days would allow workers to rest and recuperate from an injury and not have to rush back to work on pain killers. In fact, a recent report from the Midwest Economic Policy Institute on the opioid epidemic in Ohio recommended that contractors provide two weeks of paid sick leave each year to construction workers.

THE PROMISE OF ERGONOMICS

Implementing ergonomics programs in the workplace can help.

Ergonomists and industrial hygienists know how to recognize, evaluate, and control workplace hazards that contribute to musculoskeletal injury. Physical ergonomics is the discipline that studies the stresses on the musculoskeletal system imposed by work. Modifying and reducing those risks can prevent injury and illness. Redesigning jobs according to ergonomic principles can help workers avoid much work-related pain. Ergonomics programs identify and reduce these risk factors, prevent injuries, and save companies money by increasing efficiency and allowing workers to work more productively without pain. Implementation of ergonomics programs will impact the opioid crisis by reducing the need for opioids.

According to the National Safety Council, 34 percent of workplace injuries in 2016 and 2017 were related to overexertion, including lifting and lowering heavy objects and repetitive motions. Musculoskeletal injuries often result in intractable pain for which people seek medical treatment and use opioids. Unfortunately, workers on medications are often returned to the same job they were doing when they were injured, significantly increasing the chance of re-injury.

NIOSH suggests six steps for implementing an ergonomics program: identify risk factors, involve and train managers and workers, collect health and medical evidence, implement the program, evaluate the program, and promote worker recovery through healthcare management and return-to-work programs. More recently, NIOSH has advocated “systems thinking” that emphasizes establishing employee ownership of ergonomics solutions, integrating ergonomics with work organization, and sustaining safe ergonomics practices.

The barriers to implementing an ergonomics program include initial cost, lack of knowledge and skill, and limited time and resources, especially for small and medium-sized enterprises. These barriers exist even when the benefits of an ergonomics program outweigh its costs. The opioid crisis has added another dimension to the discussion. Taking opioids for pain relief after a workplace injury increases the likelihood of addiction. The cost of drug addiction—astronomical in both financial terms and in human suffering—is another reason to embrace workplace ergonomics programs.

Recent studies have demonstrated the positive effects of implementing ergonomics programs: decreased turnover, reduced absenteeism, increased productivity, and other benefits. Return-on-investment studies highlight the cost- effectiveness of ergonomics programs in many occupations including construction, healthcare, mining, and others. Savings associated with effective ergonomics programs are substantial in workers’ compensation, medical costs, and the costs of hiring and training replacement workers.

It is a primary tenet of industrial hygiene that work- related risks should be addressed by eliminating the source of the problem where possible. This approach requires consideration of the systemic barriers to organizational change and potential changes to the design of work tasks. Preventing pain should be our primary goal. The opioid crisis should be seen primarily as a pain crisis, much of which is related to work, that should be addressed through programs to prevent work-related pain such as ergonomics programs. Focusing solely on reducing the use of opioids attacks the symptoms of the crisis and will not solve the problem.

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Send feedback to *The Synergist*.

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From Injury to Tragedy
By Mary O'Reilly

The opioid crisis has touched many of us personally. My circle of family and friends includes a woman I'll call Alison, whose workplace injury led her down a path to opioid addiction. Her story is all too common.

Alison was working as a hospital nurse when she tripped over some improperly placed equipment and hurt her shoulder. Her injury did not improve after several months despite opioid medication. During that time, her shoulder and arm were not usable, and she was off from work. She could not perform all the tasks she normally did for her three small children. The constant pain took an additional toll.

Her doctors recommended surgery. Unfortunately, the surgery did not help, and the pain continued to worsen. She needed constant pain medication, which became less effective over time. After befriending some neighbors who used drugs recreationally, she joined them. Within a few months, Alison left her husband and three young children, moved in with her new friends, and, eventually, moved out of state. She has not seen nor cared for her children for the past five years. Without his parents' help, the odds of the father keeping his family together are quite low. The children are managing with the care and support of their grandparents as well as counseling sessions. What started as a workplace injury morphed into a family tragedy and another statistic in the opioid crisis.

RESOURCES

American Journal of Public Health: "A Comprehensive Approach to Address the Prescription Opioid Epidemic in Washington State: Milestones and Lessons Learned" (March 2015).

Bureau of Labor Statistics: "Injuries, Illnesses, and Fatalities."

CDC: "Understanding the Epidemic."

CDC: *Morbidity and Mortality Weekly Report*, "Occupational Patterns in Unintentional and Undetermined Drug-Involved and Opioid-Involved Overdose Deaths—United States, 2007–2012" (August 2014).

CDC: National Vital Statistics Reports, "Deaths: Final Data for 2016" (PDF, July 2018).

Cleveland Plain-Dealer: "Ohio Construction Workers Seven Times More Likely to Die of an Overdose in 2016" (November 2017).

Massachusetts Department of Public Health: "Opioid-related Overdose Deaths in Massachusetts by Industry and Occupation, 2011–2015" (PDF, August 2018).

Midwest Economic Policy Institute: "Addressing the Opioid Epidemic Among Midwest Construction Workers" (PDF, February 2018).

National Safety Council: "Injury Facts—Top Work-Related Injury Causes."

NIOSH: "Elements of Ergonomics Programs."

Spine: "Early Opioid Prescription and Subsequent Disability Among Workers with Back Injuries: The Disability Risk Identification Study Cohort" (January 2008).

Workers Compensation Research Institute: "Correlates of Opioid Dispensing" (December 2018).