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## Opioids, Acute Pain Management, Athletes, and Policy

*James E. Leone, Suanne Maurer-Starks, Kimberly A. Wise, Daniel A. Muse*

### Introduction to the opioid epidemic

Late in 2015 while driving through the backroads of several small towns in Massachusetts on the way to my sister's house, a pattern began to emerge, the number 2069 appeared on numerous signs in front lawns. Trained in epidemiology, the study of the distribution and determinants of patterns, I made a mental note to research this once I got to my destination. Before I could access the information, my sister said, "Oh, that represents the number of fatal opioid overdoses in Massachusetts." Shocked and feeling underinformed I began to delve deeper into the topic, in particular, the data.

Epidemiology is a public health tool that tracks patterns of health and disease in communities (WHO, 2017). Specifically, epidemiologists aim to study "puzzles" with hopes of identifying patterns that can illuminate a "web of causation" concerning a particular issue.

At the Eastern Athletic Trainers' Association 2018 annual meeting in Boston, MA, we hosted "Opioid Awareness and Narcan™ Training" and began the talk with a discussion on opioids from an unlikely place: Scott County, Indiana. In March 2015, a public health alert of increasing Hepatitis C and HIV cases garnered the attention from then-Governor, Mike Pence. Health officials were able to trace the outbreak to contaminated needles from people injecting opioids. Similar surges in infections were also noted in surrounding states. From an epidemiological perspective and as the "forest" became more evident from the "trees," the nation was fully in the grips of an opioid crisis, if not an epidemic.

The opioid epidemic can be classified as “home-grown” dating back to the 1980s when healthcare began looking at pain management more closely. Pain became referred to as the “fifth vital sign” to which healthcare providers (namely physicians) were to be held responsible (Portenoy & Thompson, 1986). The FDA used largely unregulated studies to expedite new pain medications because it would be “unethical” to allow people to live with pain; therefore, data were extrapolated from short-term studies and several drugs were launched. Companies, such as Purdue Pharmaceuticals began expediting research into drugs such as OxyContin™ which was marketed as optimal pain control with little to no addictive properties (Quinones, 2016). When long-term studies on these drugs confirmed their *highly* addictive properties, the damage was already done and the opioid epidemic wheel was set in motion. Despite class action lawsuits in

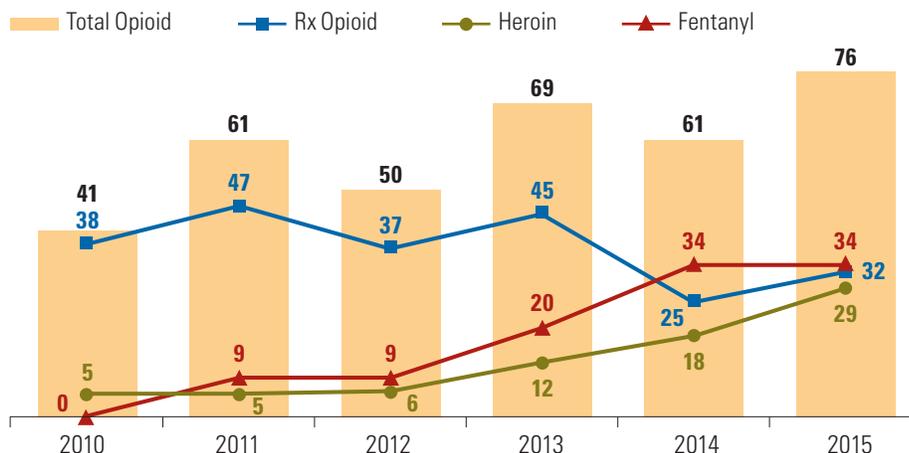
**Table 1.** Total number and rate of opioid prescriptions dispensed, United States, 2006-2016

Year	Total Number of Prescriptions	Prescribing Rate Per 100 Persons
2006	215,917,663	72.4%
2007	228,543,773	75.9%
2008	237,860,213	78.2%
2009	243,738,090	79.5%
2010	251,088,904	81.2%
2011	252,167,963	80.9%
2012	<b>255,207,954</b>	<b>81.3%</b>
2013	247,090,443	78.1%
2014	240,993,021	75.6%
2015	226,819,924	70.6%
2016	<b>214,881,622</b>	<b>66.5%</b>

Source: Centers for Disease Control and Prevention “Prescribing rate maps,” 2017.

**Table 2.** Drug-related fatalities involving opioids

Total number of accidental and undetermined manner drug-related fatalities involving an opioid (categories not mutually exclusive)



Source: Vermont Department of Health Vital Statistics System ([https://www.healthvermont.gov/sites/default/files/documents/pdf/ADAP\\_Data\\_Brief\\_Opioid\\_Related\\_Fatalities.pdf](https://www.healthvermont.gov/sites/default/files/documents/pdf/ADAP_Data_Brief_Opioid_Related_Fatalities.pdf))

2007 in which Purdue Pharmaceuticals settled for \$634 million and Cephalon (manufacturer of the opioid lollipop) for \$425 million a year later for deceptive practices (*Washington Post*, 2018), opioid prescriptions reached nearly 219 million in 2011. Unsurprisingly, there were 17,000+ opioid-related overdoses that same year. In fact, referring to Table 1 (CDC “Prescribing rate maps,” 2017), one can see the pattern emerge where in 2012, prescribing rates peaked, but stricter legislation reduced the prescription rate considerably by 2016. This can be viewed as a victory, right? Not so fast. In fact, of the 63,632 drug overdose deaths in 2016, 66.4% (42,249) were due to an opioid (Hedegaard, Warner & Minino, 2017).

Vermont data (Table 2) show that the decrease in opioid-related prescription overdoses and deaths crossed epidemiologic pathways with opioid overdoses. Illicit forms of the drug became more common. For example, heroin and the powerful synthetic opioid, Fentanyl (and more recently, CarFentanil), caused a spike in overdose deaths by 2015/2016.

Essentially, the “legal” obtaining of opioids went underground when prescribing practices changed. A 2014 *JAMA* study reported a 19% decline in opioid prescriptions, yet a 20% increase in emergency department visits for overdoses; clearly the issue was not abating but rather, shape shifting.

Being the flagship of the Massachusetts State College system, the university paved the way as the first school in the nation to implement a public-access naloxone (Narcan™) program.

According to the Institute of Medicine (2015), 100 million+ Americans experience chronic pain with roughly 10 million taking opioids and related substances. Another 2.1 million people are addicted (NIH, 2016; NIDA, 2017), which is likely under-reported due to the stigma attached to drug use. The latter statistic is most concerning considering 4 out of 5 heroin addicts claim using opioid-based drugs prior to their heroin addiction (Jones, 2013).

Every state profile on opioid abuse will vary, however the overall picture is concerning. According to CDC data (2017), overdose rates increased from 2014 to 2015 (Table 3), illustrating that the U.S. has the highest opioid use rate in the world.

County-wide data also show where most overdoses and deaths are occurring; however, caution should be taken when viewing the data considering that incidences may not occur where people reside, thus complicating how public health and law enforcement target their efforts. Accurate reporting matters and underscores the adage, “if it is not counted, then it doesn’t count.”

Other factors also play a role in opioid use and deaths; namely, region (Midwest and Northeast), socioeconomic status (middle to middle-lower class), gender (male, 76%), and age (25–44 years). Using a person, place, and time approach can help target efforts and promote policies that satisfy all levels of prevention. Healthcare providers such as athletic trainers often are referred to as the “eyes and ears” in various settings; therefore, we have a tremendous opportunity to positively impact the opioid crisis nationally; this is not an issue that will be solved in isolation.

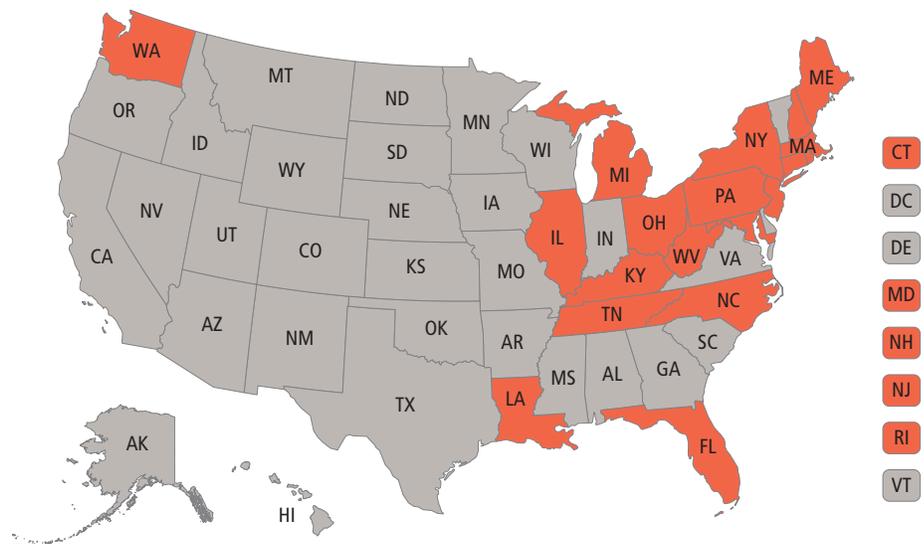
## Starting the discussion

Stigma plays a significant role in the opioid epidemic. For example, drug use often is accompanied by mental health challenges, legal issues, and

socioeconomic burdens among others. It is difficult to treat addiction when multiple life challenges may be at play. These issues often do not start with a single event and will certainly not be solved by a singular approach. It is evident that changes must be made to current practices of pain management. Awareness and education are important, but changing attitudes and perceptions of what opioid use and addiction is, may lead to traction in the advocacy and policy arena. Frank discussion about the profile of opioid use is greatly needed rather than scrambling

Nearly 7.7 million adolescents participated in interscholastic sports in 2013 and approximately 20% have sustained an injury resulting in medical attention, including surgeries (Kerr et al., 2012). Given these numbers, we can assume adolescents may be prescribed opioids to manage pain. It is vital that school officials, parents, and athletic trainers closely monitor trends in schools and communities through valid and reliable surveillance to properly target issues and allocate resources. Data from surveillance such as the Youth Risk Behavior Surveillance System

**Table 3.** Statistically significant drug overdose death rate increase from 2014 to 2105, US states



Source: CDC, 2017

to put a band-aid over the problem with more treatment facilities and access to drugs such as nalaxone (i.e. Narcan™). Even social justice issues need to make it into the discussion. For example, Representative Diana Richardson (D – NY) stated, “Opioid abuse gets you sent to treatment; crack abuse gets you sent to prison!” This statement reflects the deep-seated mismanagement of drug issues based on race and class, which even has been acknowledged in a 2014 *JAMA* report, “...heroin addiction had migrated from low-income urban areas with large minority populations to more affluent suburban and rural areas with primarily white populations.”

(YRBSS) as well as a more recent push to include the Screening, Brief Intervention, Referral, and Treatment (SBIRT) for students and athletes, may provide robust data to tailor programs and policies around opioid use and pain management unique to each school and community. For example, data from the YRBSS “Trends in the prevalence of marijuana, cocaine, and other illegal drug use national YRBS 1991–2015,” suggested a 3.5% decrease in use of prescription drugs (e.g. opioids) during the period of 2009–2015 (20.2% – 16.8%) (YRBS “Trends,” 2017); however, a sharp upturn in opioid use

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## Leading by Example: The Bridgewater State University Connection Story

On June 22, 2017, a mock overdose was staged at Bridgewater State University spearheaded by the Athletic Training Program and Signature Health, Brockton Hospital. The simulation included two men pretending to overdose in a car, athletic trainers, first responders, campus police, and emergency medical technicians, and staged a drill demonstrating the immediacy required during an emergency situation.

The concept of the staged overdose began in 2016 when the two institutions shared similar sentiments for the need to educate and train healthcare providers about pain management. This 'buy-in' was the first step to educate the local community and its constituents. The symposium featured the use of the overdose antidote, naloxone (Narcan™), and how to use it. Unfortunately, rather than preventative education, facilitators were asked to prepare responders for the immediate use of naloxone due to the spiking rates of opioid overdoses. The underlying theme, however, was to advocate a culture of change within the medical community and for the naloxone to be a staple part in the athletic trainer's first-aid kit.

As part of Bridgewater State University's new initiative, an informational training event was held at the institution in September, 2017. The University's initiative was to place naloxone in 50 locations across campus including residence halls. This approach also has been likened to the placement of Automatic External Defibrillators (AEDs) in similar settings. Being the flagship of the Massachusetts State College system, the university paved the way as the first school in the nation to implement a public-access naloxone (Narcan™) program.

and overdoses began in 2015. Data are informative, however, accurate reporting needs to be assured and triangulated with other sources such as emergency departments, law enforcement reports, and community mortality data.

Instruments and approaches such as the SBIRT aim to identify those at risk through selected screening, use an intervention protocol, and referral for accessible treatment before potential for abuse goes unmitigated. The SBIRT approach may be most useful during vulnerable periods for athletes such as post-injury and post-surgery due to high potential for pain and access to medications. Healthcare providers are well-positioned to initiate and follow through with conversations and, hopefully, action plans.

### Key Involvement Players

In order to assist in creating a culture of change, healthcare providers need to be cognizant of the community stakeholders as these individuals can either be a help or hindrance when attempting change and policy development. For example, in the secondary school setting, an athletic trainer may need to seek out support of parents, the PTO, school administration, school

board, teachers, coaches, and the school nurse. If it is a private school, the board of trustees as well as alumni may be part of the process to obtain 'buy-in.' In looking at the collegiate setting, an athletic trainer may be seeking out the assistance and support from other athletic trainers, team physician(s), health services, administration (deans through the president), as well as coaches and athletes themselves. Consultation with NCAA representatives and even legal counsel may also help to create a well-rounded policy.

We suggest taking time to identify key community members to better assist in the development of a pain management policy. Change and policy cannot occur in a vacuum, and it is our belief that 'buy-in' needs to take place with any successful policy, pain management and opioids notwithstanding. Participation could take the form of informational sessions, workshops linked to other community events (road races, farmers' markets, etc.), targeted media campaigns, door-to-door advocacy, yard signs, social media, newspaper columns, pre-season sessions, PTO/PTA meetings, and open forums.

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Utilizing the athletic trainer to set the AIP in motion begins with mandatory substance abuse training. This education offers a platform for athletic trainers to prepare patients and caregivers about pain management strategies for both pre- and post-surgical procedures. As such the athletic trainer can advocate for alternative pain treatment, such as over-the-counter medications (NSAIDS) and the well-known RICES protocol. If an opioid is warranted, the '3 squared' monitoring protocol should be advocated, which includes no more than a *three-day supply* of opioids taken no more than *three times a day*. Additionally, patients and caregivers need to receive education on balanced analgesia; particularly best practices, addiction potential, risk of mixing, storage and disposal of prescriptions and warning about operating a vehicle.

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### Prevention: An acute pain management policy

High-quality, evidence-based pain care is essential to pave the way for burden reduction of pain for individuals while reducing the inappropriate use of opioids (Jones & Singh, 2017). YRBS "Trends" 2017 suggests the addiction cycle begins with a substantial injury. As a result, a healthcare provider may prescribe opioid-based medication for pain management, but lack of attention to numerous factors including the number of pills ingested by the athlete, can easily set them on the path to addiction. When dependent on opioids the inability to escape pain can create a sense of hopelessness. The athlete may then turn to street drugs (e.g. heroin) because the prescribed opioid access expires. When considering this scenario, it is easy to see how addiction evolves from a single episode of injury.

Athletic trainers are the medical 'eyes and ears' within a traditional athletic environment. Due to the consistent

face-to-face interaction, a strong connection between patient and provider can ensue. As such, the authors believe athletic trainers need to have vast knowledge about how analgesics are used to treat pain, common side effects, and interventions for the prescribed medication (Chou et al., 2009). Continuing education is warranted for current practitioners and perhaps adding a focus in pharmacology during education also may prove helpful. The authors advocate for athletic trainers to incorporate Screening, Brief Intervention, and Referral to Treat (SBIRT™) to their repertoire, which will aid in the identification, reduction and (hopefully) prevention of problematic use, abuse, and dependence on alcohol and illicit drugs after injury. Benefits of SBIRT are multifaceted when the athletic trainer is equipped to provide an educational platform for their community and an Acute Injury Protocol (AIP) to aid in the recognition of athletes who are considered high risk for substance abuse (SAMHSA).

Balanced analgesia, the administration of a mixture of a small amount both opioid and over-the-counter pain medications also may prove useful in controlling pain while limiting the addictive effects of opioid medications. Combination analgesics are likely as effective in pain control, however, further research is needed (Kehlet, Werner & Perkins, 1999). Several other topics, strategies, and discussion points concerning responsible opioid prescribing and use, as well as pain management approaches, can be found in "Plymouth County's Response to the Opioid Crisis" available at: [https://otf.plymouthda.com/wp-content/uploads/2018/01/Medical-Task-Force-Paper-Final\\_11.21.17.pdf](https://otf.plymouthda.com/wp-content/uploads/2018/01/Medical-Task-Force-Paper-Final_11.21.17.pdf).

### Sample Programs and Policies

The authors suggest several points about the creation of a pain management policy and opioid education. First is a prevention-based model whereby patients who would likely be receiving pain medication (i.e. surgical patients) are educated on their effects

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prior to surgery. If adolescents are the patient group, then discussion and education must take place with guardians as well as the adolescents themselves. Included in this discussion could be the addictive nature of specific pharmaceutical agents and appropriate dosage of narcotics that *should* be used versus what is being prescribed.

Additionally, what should be considered in this discussion are the signs and symptoms that would hint at possible addiction. Key signals to identify possible addiction should not only be discussed with parents/caregivers, but also with all who are involved with this population. The athletic trainer can also help identify alternative pain management. For example, literature has suggested non-drug techniques in managing pain are efficacious. This includes

the key role and positioning of athletic trainers is an essential piece in solving the opioid crisis. For example, accurately reporting issues via arrest reports, death certificates, and even mentioning the cause of death in obituary notices, may prove useful in helping diminish stigma surrounding opioid use. Athletic trainers' functioning in diverse roles and settings may be what is needed in attenuating opioid use, abuse, overdoses, and ultimately mortality, via concerted awareness, advocacy, and action. We have presented some models and ideas concerning this epidemic in our communities, such as using data-informed decision making, the SBIRT approach, and alternative pain management strategies; however, what is most needed, in our collective opinion, is prevention. Working closely with



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relaxation, distraction (i.e. music), imagery, and massage among others. Some have suggested a combination of interventions to reduce pain (i.e. relaxation, music and massage) as alternatives to traditional pain management (Wells, Pasero & McCaffery, 2008).

### **The future: A call to action**

Rather than ending this article with a conclusion, we have chosen to end with a call to action. Accurate reporting and surveillance through epidemiology and

healthcare providers in a true team-based approach (as in the Bridgewater State University initiatives and Massachusetts approaches) and developing model pain management policies that provide direction and accountability, likely will lead to a better future. As so many drug users have said repeatedly, "I never thought I would get hooked!" – let's assure we use our foresight in these efforts.



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