

***Annotated Guidance and Recommendations for the Role and Actions of  
Emergency Medical Services Systems in the Current Opioid Epidemic***

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\*The metropolitan municipalities EMS medical directors group is a *de facto* coalition of the designated jurisdictional emergency medical services (EMS) medical directors for most of the United States' 50 or so most populous cities. It also includes medical director counterparts in Europe and many other countries globally as well as key federal agencies and the leadership from several applicable professional medical societies including the *National Association of EMS Physicians* (NAEMSP), the *American College of Emergency Physicians* (ACEP) and others. (<http://www.gatheringofeagles.us/2018/2018information.htm>).

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## **ABSTRACT**

**Background:** The current opioid epidemic has a death toll that rivals all other causes of premature death across the United States (U.S.) and elsewhere. The medical discipline of emergency medical services (EMS) has a special place within the collective of all interested parties hoping to provide solutions to this crisis and all other drug-related epidemics.

**Methods:** A cadre of EMS medical directors from the largest U.S. cities and several global counterparts shared opinions in a discussion panel designed to create an assimilated inventory of observations and best practices derived from their experiences in their respective high-volume, high-risk cities where approximately 114 million citizens reside. An annotated list of suggestions for best practices in EMS medical management was created as well as suggested strategies for EMS system participation in addiction recovery programs.

**Results:** A 15-point annotated list was developed that addressed medical management including a primary focus on respiratory support, a secondary focus on naloxone use (and its potential limitations) coupled with early electrocardiographic assessment. The list also specified avoidance of tunnel vision approaches in assessment, a renewed focus on protective equipment procedures to avoid exposures and self-protection from violence. It also included standardized and collaborative data collection, collaborative training with law enforcement and it emphasized partnering with public and mental health agencies, the medical community, in-hospital facilities and other key stakeholders to facilitate a continuum of care and recovery. They also emphasized training and education of EMS professions in terms of addiction intervention techniques and how to optimally refer and facilitate retention of patients to recovery programs.

**Conclusions:** In addition to intervening acutely to rescue patients from real-time opioid-related events, EMS agencies must also be strongly invested in partnering with key stakeholders to develop mechanisms to end the recidivist revolving door of emergency care and the usual immediate return to addictive behaviors, overdoses and related complications. As part of that partnership, EMS providers should be trained to optimally communicate, encourage and refer/direct the affected individuals to those appropriate resources that will provide viable and evidenced-based pathways directed toward sustained recovery from this pernicious affliction.

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## **BACKGROUND:**

Drug overdoses, and particularly those related to prescription and non-prescription opioids, have become the leading cause of death of Americans under 50 years of age and a recognized major burden on society as a whole.<sup>1-4</sup> In the United States (U.S.) alone, it has been estimated that over 63,632 persons died during 2016 from drug overdoses (incidence of 19.8/100,000).<sup>1</sup> This death toll is the highest ever recorded for these largely preventable deaths. Comparatively, the number of people killed in U.S. car crashes during the same period was 37,461.<sup>5</sup>

Among all drug overdoses, heroin-related deaths alone rose to 12,989 in 2015, a 23% increase over 2014. This figure exceeded the number of U.S. gun-related homicides (which was about 9,600 in 2015).<sup>6-8</sup>

Beyond heroin, however, opioids as a whole were implicated in over 33,215 deaths in 2015 (91 deaths a day) and this figure accelerated to 42,249 (115 a day) in 2016, accounting for 66.4% of all drug overdose deaths.<sup>4,8,9</sup>

The societal loss is staggering. It is estimated that in 2016 alone, there were 1.77 million years of life lost in the U.S. due to the opioid death toll. While the largest absolute increase in opioid-related deaths between 2001 and 2016 (in terms of sheer numbers) occurred among those 25-34 years (a 15.8% increase), the burden of overdose among adults between the ages of 55 to 64 was also growing at a “concern rate” in that the relative increase (754%) observed between 2001 and 2016 was the largest across all age groups.<sup>4</sup>

While deaths have escalated, it is also estimated that for every fatal overdose, there are 25 to 50 non-fatal overdoses, thus emphasizing that epidemic is more rampant.<sup>9</sup>

While the opiate, heroin, is traditionally considered the greatest contributor to narcotic-related deaths, the opioid chemical, fentanyl, has emerged to become the largest drug threat in the U.S., being directly linked to 44 deaths every day in 2016.<sup>10,11</sup> First synthesized in Belgium in the late 1950s, fentanyl was introduced into medical practice in the 1960s as an intravenous anesthetic (trade name, *Sublimaze*®) that had an analgesic potency at least 40 times stronger than heroin and 80 times that of morphine.<sup>9-11</sup>

Today, fentanyl and fentanyl analogs (e.g., acetylfentanyl, butyrylfentanyl, carfentanil and U-47700), have become easily produced and distributed at exceptionally low cost to users, further amplifying the problem.<sup>9</sup> Moreover, they are much more potent. For example, the fentanyl analog, carfentanil, has a potency that is 5 to 10,000 times that of morphine. With unpredictable quantities of the fentanyl analogs in given batches and uncontrolled mixtures with other substances, the overdose and complication rates have increased exponentially and the physiological manifestations have become more complex.

Beyond the classic respiratory arrests and pulmonary edema seen with traditional heroin overdoses, other complications such as cardiac dysrhythmias are now occurring more frequently. This may occur largely due to polypharmacy, different formulations and complex chemistry such as in the case of loperamide overdose.<sup>9,12-14</sup> In addition, due to occasional prolonged depressed mental status, there are other observed complications including those ranging from associated fall injuries, exposure-hypothermia and dehydration to rhabdomyolysis and consequent azotemia.<sup>9,12-16</sup> With escalating volumes of opioid-related cases, such complications and electrocardiographic (ECG) disturbances linked to rhabdomyolysis and associated hyperkalemic and hypercalcemia, have now become more frequent as have associated renal failure, compartment syndromes and even paraplegia.<sup>9,12-16</sup>

With polypharmacy and unknown or misrepresented substances being taken, opioid-related overdoses may not always present with the classic presentation of miosis. At the same time, when bilateral pupillary constriction is observed, a differential diagnosis still should still be entertained that ranges from cholinergic toxicity and pontine hemorrhage to other neurological processes – or even the combination of such conditions in certain environments.<sup>9</sup>

As this most recent opioid epidemic rapidly evolved, emergency medical services (EMS) agencies were often inundated with frequent 9-1-1 responses. For some communities, this often became akin to an on-going multiple casualty incident each time new batches were introduced into their communities nationwide.<sup>17-18</sup> EMS has been routinely involved as they were regularly on the front lines trying to save lives and doing their best to reduce the impact on the death toll as were many firefighter, police and volunteer first responders.<sup>17-18</sup>

As primary medical first responders, however, EMS providers were uniformly called to the scene of these tragedies with or without police and fire as the epidemic progressed. EMS healthcare providers have directly witnessed first-hand the increase in the drug overdose death rate and the associated sequelae.<sup>1-4,17-20</sup> Perhaps the most worrisome and discouraging impact for EMS personnel has been psychological in that the opioid abuse epidemic and its related toll has been most prevalent among young and otherwise healthy persons.<sup>4,21</sup> While opioid abuse resulting in this premature loss of life is now being recognized by all as a major public health crisis<sup>4,17</sup>, it has also taken a toll on EMS agency personnel, not only in terms of demands on resources and workloads, but also in terms of stresses of continually witnessing these tragedies and also self-protection because of related personal violence and exposure to potent drugs.<sup>18-23</sup>

Having described all of these concerning statistics and their impact, many EMS systems and their medical community and public health counterparts have recently begun to create new, collaborative and *even some successful* in-roads in terms of reducing the impact of this crisis and its human toll.<sup>24-35</sup>

For example, two recent illustrative scenarios have been reported in Columbus, Ohio and Palm Beach County, Florida.<sup>30-33</sup> Both communities had been heavily inundated with so-called “prescription mills” and later became primed sites for opioid addicted persons.

In response, the *Columbus Division of Fire* (Columbus, Ohio) has developed several ways to engage patients with opioid-use disorder. For example, partnering with a mental health agency, they established the “RREACT” (*Rapid Response Emergency Addiction and Crisis Team*) initiative. For those cases in which opioid overdose patients respond to naloxone but may not need (or otherwise decline) transport to an emergency department (ED), the RREACT, consisting of a specialized responding firefighter/police officer team, assists with direct referral for those who want to seek addiction treatment.

The goal of this program is not only to decrease ED transports, diminish out-of-service time periods for EMS vehicles and reduce compassion fatigue in EMS providers, it is intended to increase the coordination of more definitive follow-up patient care. More specifically, the responding RREACT members facilitate the linkage between opioid abusers and appropriate recovery resources and they also increase patient and family awareness of harm reduction services. As indicated, they expedite access to naloxone kits and also related training for family and friends. Since inception of the RREACT, Columbus has continued to focus upon, develop and research best practices for enhanced community care coordination.

In that respect, Columbus also recently engaged addiction professionals within the community to help set up the *Maryhaven Addiction Stabilization Center*<sup>30,31</sup>. This center, refurbished from a former hospital facility, contains a five-bed ED and 55 inpatient beds for detoxification. This facility now serves as a primary receiving facility where EMS can transport patients who are medically stable and are seeking treatment from their opioid addiction.

Another EMS jurisdiction challenged with high volumes of opioid-related overdoses and accompanying recidivism was Palm Beach County, Florida. Coordinated by *Palm Beach County Fire Rescue* (PBCFR), a partnership was formed with one of the local tertiary care centers (that receives many opioid overdoses), the local health care district and specialists in addiction services. The specific aim of this partnership was to demonstrate the ability to mitigate the recidivism of narcotic abuse disorder by identifying and providing narcotic substance abuse patients with a longitudinal system of highly-coordinated care involving an acute out-patient medication assisted treatment (MAT) program that is directly facilitated and managed by a team of community-based paramedics (CPs) during the most vulnerable phases for relapse, namely the first week following ED treatment.

The studied system of coordinated care has included an initial ED-based phase involving a brief intervention and referral to treatment followed immediately by out-patient access to a closely-supervised MAT bridging program facilitated and managed by the team of CPs.

During this pivotal second phase, implemented during that high-risk first week, the CPs supply a daily administration of buprenorphine-naloxone combination therapy (Suboxone®) and they coordinate follow-up with peer support counselors. The CPs then ensure a “warm” and highly-coordinated hand-off for seamless continuity of care with an established MAT program provided by psychiatry and internal medicine specialists.

In this study, the success rate for treatment compliance has been measured by way of a follow-up project that includes drug testing for both opioid and Suboxone® metabolites. Preliminary results indicate a very strong success with compliance based on hard objective data (actual drug tests as far out as 6 months versus unsupported subjective reports of being drug-free from the patients). In addition, as in Columbus, similar efforts to establish an addiction treatment receiving facility are already underway in Palm Beach County as well.

Another part of EMS actions is the development of violence mitigation training programs such as those in Detroit, Raleigh, Philadelphia, Melbourne and elsewhere<sup>34-36</sup> Techniques such as verbal judo, training with police and undergoing simulated scenarios have begun to address this additional challenge to EMS from the opioid crisis.<sup>34-36</sup>

Therefore, the purpose of the following document is to provide a simple, annotated compilation of major recommendations for EMS systems with a specific focus on their part and roles in dealing with this global problem.

## **METHODS**

### ***Document Source:***

The metropolitan municipalities EMS medical directors group (a.k.a., “Eagles”) is a *de facto* coalition of the designated jurisdictional EMS medical directors for the nation’s 50 or so most populous cities. It also includes medical director counterparts in Europe (e.g., Paris, London, Berlin) and many other countries globally as well as key federal agencies and also the leadership from several applicable professional societies.<sup>32</sup>

Although the majority of the members of this team constitute the designated jurisdictional medical directors for local 9-1-1 systems and EMS agencies as described, any statements, publications, and educational offerings made by the group do not represent either their local agencies/municipalities from which they hail, nor any specific political or interest agenda except each participating individual’s wish to improve emergency healthcare worldwide based on medical and scientific principles.

The group held a face-to-face conclave in Dallas, Texas, February 28 through March 3, 2018 during which time they discussed their respective issues, experiences and solutions including presentations on current suggested solutions and the role of EMS in those solutions.

Best practices from their respective communities were annotated and the designated writing group drafted a document list for sharing among themselves and their home agencies. Further discussion evolved by way of continued discussions through the group's email list and a subsequent group review of this drafted document.

***Intended End-Point is Information-Sharing:***

Individual members of the group and those developing the document do not consider themselves to be part of an official organizational structure and there are no governing by-laws, dues, officers, policy-making committees or any binding obligations except for the mission-driven sharing of information and a cohesive collaboration as indicated for major disasters, day-to-day 9-1-1 / 9-9-9 / 1-1-2 / 1-1-3 response practices, and any other given public health threats involving EMS.

In that respect, statements such as the following should therefore be understood as the combined, shared opinion of a discussion panel of medical directors from large, high-volume systems regarding optimal EMS medical management and care delivery who have the means for regular open discussion and personal collaboration to aid each other day-to-day in the public safety needs for the tens of millions whom they serve.

Each are loyal members of their own professional societies (e.g., *American College of Emergency Physicians, National Association of EMS Physicians, etc.*) and their local governments and they simply consider their collective selves as a resource faithfully serving all of the above. The following statements were developed largely for the team's internal purposes, but they are also open for use by any other responsible entity that may be able to use them to benefit our patients.

**RESULTS**

***Annotated Recommendations:***

With respect to its involvement and role in the national crisis of opioid abuse and misuse (and any other related drug crisis), the metropolitan municipalities EMS medical directors coalition (a.k.a., "Eagles") proposed to each other the following best practice recommendations in the hope of collaboratively providing some lasting solutions to one of the most serious public health dilemmas encountered in modern American history:

- 1) Opiate and opioid addiction overall must be regarded as a chronic, relapsing disease that has multi-factorial causes requiring medical, psychological and logistical interventions to render more definitive long-term treatment and recovery.

- 2) In acute overdose, restoration of breathing with opioid-related respiratory compromise is paramount and well-practiced skills with assisted ventilation support should become a primary responsibility and skill for all EMS responders and the proper capability to provide that support.
- 3) Naloxone, a chemical administered to resuscitate victims of narcotic (opioid) overdose, can be life-saving to many of these patients and thus be administered in sufficient quantity to stabilize patient conditions, but it must also be administered in a judicious manner given some potential side-effects, both medically (e.g., associated pulmonary edema) and operationally (e.g., an awakened patient now refusing care).
- 4) Personal protective equipment and practices are extremely important during any EMS response and, in the case of assessing for any kind of overdose, it is important for EMS providers to be particularly observant for their own potential risk of exposure to the now potent narcotics and also the violence frequently encountered.
- 5) There should be avoidance of tunnel-vision and open-minded considerations of any historical and bystander information provided in such situations in order to maintain assessments for more complex situations such as combined drug use, unknown drug use and the environment accompanied by careful physical exam and electrocardiographic evaluation/monitoring along with considering any other co-existing conditions including related trauma, simultaneous neurological event or exposures (e.g., pontine hemorrhage or insecticides causing miosis).
- 6) Training and prospective planning with co-responding law enforcement agencies should be addressed and mapped-out, particularly in those communities where naloxone has been distributed to police and citizens at large and where first responders themselves may be exposed to ultra-potent opioids or violence.
- 7) Data collection with regard to opioid overdoses is a pivotal task and this invaluable information should be (responsibly and properly) shared with appropriate public health partners for the purpose of: a) identifying high-risk populations and known or newly-observed complications; b) conducting epidemiological surveillance regarding the types and combined types of drug usages and their presentations; and c) pinpointing geographic hotspots for drug overdose activity and any variation in temporal spikes in activity.



- 8) EMS personnel should receive training on the nature of addiction and how best to communicate with opiate abusers (and loved ones) in a manner that will best gain their confidence and encourage them to seek treatment along with alerting them to areas of referral and sustained recovery in their given community including on-the-spot communications with addiction recovery experts.
- 9) The training with regard to optimal communications with opiate abusers can even include positive recovery success stories and principles of addiction science and training should also help them to comfortably provide teachable moments in the given moments of EMS interaction following resuscitation and lucidity from an acute overdose scenario.
- 10) Resiliency training and monitoring of providers may be needed, particularly in EMS agencies with a high volume of overdose patients and, in others, just-in-time training may be needed following newly-encountered epidemics in a given community.
- 11) EMS agencies should become part of the process for developing innovative approaches to this national problem, such as relevant community-based paramedic programs to provide pathways that can facilitate more definitive treatment, especially for those expressing a possible intent to recover from opiate addiction and the cycle of recidivism and risk of death.
- 12) EMS agencies and providers should become familiar with reputable and evidence-based community resources that can guide patients into available treatment options which may include outpatient programs and/or inpatient detoxification treatment as indicated.
- 13) Administratively, EMS agencies should responsibly educate their EMS providers in terms of the technical aspects of how to specifically make referrals to those programs that are available in their respective communities and they should also provide their personnel with the indicated protocols to assist them in optimally routing affected patients into these programs as deemed appropriate by the medical and public health communities.
- 14) EMS agencies should continue to stay at a leading edge of innovation and partner with other organizations in their communities to help develop and create more reputable and evidence-based resources for opioid-addiction intervention and rehabilitation, including medication-assisted treatment (MAT) programs, such as those that are currently evolving in many jurisdictions.

15)EMS agencies nationwide should continue to collaborate and share data and local success and failure stories alike to help establish and promulgate best practices throughout the U.S. and worldwide.

## **SUMMARY**

The medical discipline of EMS has a special place within the collective of all interested parties hoping to provide solutions to the public health crisis of opioid addiction and other drug-related epidemics.

In addition to intervening acutely to rescue potentially dying patients from real-time overdose events, EMS agencies must also be strongly invested in partnering with key stakeholders to develop mechanisms to end the recidivist revolving door of emergency care and almost immediate return to addictive behaviors and overdose.

As part of that partnership, EMS providers should be trained to optimally communicate and refer and direct the affected individuals to those appropriate resources that will provide viable and evidenced-based pathways directed toward recovery from this pernicious affliction.

Evolving evidence, as indicated in the included in the sample list of references, has shown that EMS agencies working together with their public safety and public health partners can indeed create substantial risk reduction and subsequent improvement in the quality of life for these patients and their communities as a whole.

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## REFERENCES

1. Hedegaard H, Warner M, Miniño AM for the National Center for Health Statistics (NCHS). Drug overdose deaths in the United States 1999-2016. *NCHS Data Brief*: December 2017; 294:1-8.
2. Seth P, Scholl L, Rudd RA, Bacon S for the U.S. Centers for Disease Control and Prevention (CDC) Morbidity and Mortality Weekly Report (MMWR). Overdose deaths involving opioids, cocaine, and psychostimulants — United States, 2015–2016. *MMWR Weekly* March 30, 2018;67(12):349–358
3. Dowell D, Arias E, Kohanek, et al. Contribution of opioid-involved poisoning to the change in life expectancy in the United States, 2000-2015 *JAMA* 2017; 318:1065-1067. ‘
4. Gomes T, Tadrous M, Mamdani MM, Paterson M, Juurlink DM. The burden of opioid-related mortality in the United States. *JAMA Network Open* June 2018; 1(2):e180217. doi:10.1001/jamanetworkopen.2018.0217
5. Insurance Institute for Highway Safety Highway Loss Data Institute: General Statistics 2016. <http://www.iihs.org/iihs/topics/t/general-statistics/topicoverview> Accessed June 21, 2018
6. Heron M for the Division of Vital Statistics, U.S. Centers for Disease Control and Prevention (CDC). National Vital Statistics Reports: Deaths. Final Data for 2015. November 27, 2017; 66 (6): Table I-3. [https://www.cdc.gov/nchs/data/nvsr/nvsr66/nvsr66\\_04.pdf](https://www.cdc.gov/nchs/data/nvsr/nvsr66/nvsr66_04.pdf) Accessed June 21, 2018
7. Rodhan M. Gun-related deaths in America keep going up. *Time* Nov 6, 2017. <http://time.com/5011599/gun-deaths-rate-america-cdc-data/> Accessed June 21, 2018.
8. Rudd RA, Seth P, David F, Scholl L for the U.S. Centers for Disease Control and Prevention (CDC) Morbidity and Mortality Weekly Report (MMWR). Increases in drug and opioid-involved overdose deaths – United States 2010-2015. *MMWR* 2016;65:1445-1452.
9. Wilkerson RG, Gatz JD, Liu ML. Advanced management opioid overdose in the emergency department. *Emerg Med Reports* March 15, 2018: 39:61-74.
10. U.S. Centers for Disease Control and Prevention (CDC). CDC health advisory: increases in fentanyl drug confiscations and fentanyl-related overdose fatalities. October 25, 2015. <https://emergency.cdc.gov/han/han00384.asp> Accessed June 21, 2018.

11. National Institute on Drug Abuse: Fentanyl <https://www.drugabuse.gov/drugs-abuse/fentanyl> Accessed June 21, 2018.
12. Lipski J, Stimmel B and Donosa E. The effect of heroin and multiple drug abuse on the electrocardiogram. *American Heart J* 1973;86:663-668.
13. Roden DM. Drug-induced prolongation of the QT interval. *N Engl J Med* 2004; 350:1013-1022.
14. U.S. Food & Drug Administration (FDA) Drug Safety Communication: FDA warns about serious heart problems with high doses of the antidiarrheal medicine loperamide (Imodium), including from abuse and misuse. January 30, 2018. <https://www.fda.gov/Drugs/DrugSafety/ucm504617.htm> Accessed June 23, 2018
15. Kumar R, West DM, Jingree M, Laurence AS. Unusual consequences of heroin overdose: rhabdomyolysis, acute renal failure, paraplegia and hypercalcaemia. *Brit J Anaesthesia* 1999;83:496–498.
16. Chaikin HL. Rhabdomyolysis secondary to drug overdose and prolonged coma. *South Med J* 1980;73:990-994.
17. Gostin LO, Hodge, JG, Noe SA. Reframing the opioid epidemic as a national emergency *JAMA*. 2017;318(16):1539-1540.
18. Faul M, Lurie P, Kinsman JM, Dailey MW, Crabaugh C, Sasser SM. Multiple naloxone administrations among emergency medical service providers is increasing. *Prehosp Emerg Care* 2017, 21:4, 411-419.
19. Kinsman JM. Fighting the opioid crisis from the front lines. *EMS World* August 31, 2016  
<https://www.emsworld.com/article/12252049/fighting-the-opioid-crisis-from-the-front-lines>
20. Weber JW. Chicago fentanyl-laced heroin epidemic 2015 and Levy MK. The drug epidemic becomes an MCI in the “Last Frontier” state (plenary presentations at the *EMS State of the Science* conference, February 20, 2016.  
<http://gatheringofeagles.us/2016/2016Presentations.htm>

21. Baker W. Those on the front line of heroin epidemic share frustrations, concerns. *Journal-News* Butler County, June 2, 2017.  
<https://www.journal-news.com/news/local/those-front-line-heroin-epidemic-share-frustrations-concerns/ExFCcpgGpj6uV64E0SVPFO/> Accessed June 24, 2018
22. Lynch MJ, Suyama J, Guyette FX. Scene safety and force protection in the era of ultra-potent opioids. *Prehosp Emerg Care* 2018;22:157-162.
23. McGrath MK. First responder PTSD: the escalating health risks for opioid crisis emergency response teams *RAVE Mobile Safety* December 05, 2017  
<https://www.ravemobilesafety.com/blog/first-responder-ptsd-during-opioid-crisis> Accessed 06/24/2018
24. Rienzi G. Johns Hopkins pilots study on EMS treatment of substance abusers; *John Hopkins Gazette* Sept-October 2014.  
<https://hub.jhu.edu/gazette/2014/september-october/focus-baltimore-city-ems/> Accessed June 24, 2018
25. Gaines K. EMS treatment referral program for opioid and heroin overdose *Efficient Government* April 6, 2018.  
<https://efficientgov.com/blog/2017/04/06/ems-treatment-referral-program-heroin-overdose/> Accessed June 24, 2018
26. Hawk KF, Vaca FE and D'Onofrio G. Reducing fatal opioid overdose: prevention, treatment and harm reduction strategies. *Yale J Biol Med* 2015 Sep; 88:235–245.
27. Potter JS, Dreifuss JA, Marino EN, et al. The multisite prescription opioid addiction treatment study: 18-month outcomes. *J Subst Abuse Treat* 2015;48:62-69.
28. Weiss RD, Potter JS, Griffin ML, et al. Long-term outcomes from the *National Drug Abuse Treatment Clinical Trials Network* Prescription Opioid Addiction Treatment Study. *Drug Alcohol Depend* 2015;150:112-119.
29. D'Onofrio G, O'Connor PG, Pantalon MV, Chawarski MC, Busch SH, Owens PH, Bernstein SL, Fiellin DA. Emergency department-initiated buprenorphine/naloxone treatment for opioid dependence. *JAMA* 2015;313:1636-1644.
30. Price R. Emergency overdose-treatment center to open Friday. *Columbus Dispatch* January 18, 2018.  
<http://www.dispatch.com/news/20180118/emergency-overdose-treatment-center-to-open-friday>

31. Alcohol, Drug and Mental Health Board (ADAMH) of Franklin County, Ohio. Maryhavens Addiction Stabilization Center opens its doors. <https://adamhfranklin.org/maryhavens-addiction-stabilization-center-opens-doors/> Accessed June 29, 2018
32. Capozzi J. Heroin epidemic: As deaths rise, program a 'glimmer of hope' for life. *Palm Beach Post* Friday, April 21, 2017. <https://www.mypalmbeachpost.com/news/heroin-epidemic-deaths-rise-program-glimmer-hope-for-life/c8ITU5Q2IJbVFfEjSZKwpK/>
33. Swisher S. Palm Beach County launches detox program aimed at lowering heroin death toll. *Sun Sentinel* January 5, 2017. <http://www.sun-sentinel.com/local/palm-beach/fl-palm-heroin-pilot-program-20170105-story.html>
34. Johnson B, Conterato M. Violence against EMS: rolling with the punches. *Emergency Physicians Monthly* July 5, 2017. <http://epmonthly.com/article/rolling-with-the-punches/>
35. Virtual reality training to prepare paramedics for violent patient encounters. *EMS1* May 8, 2017. <https://www.ems1.com/ems-products/training-products/video/202921187-Virtual-reality-training-to-prepare-paramedics-for-violent-patient-encounters>
36. Dunne RB. Detroit Fire Department addresses violence against EMS providers following attack. *JEMS* 2017;42:1-10.
37. Metropolitan EMS Medical Directors Coalition. <http://www.gatheringofeagles.us/2018/2018information.htm>