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To: Ohio EMS providers, EMS agencies, and EMS medical directors

From: Carol A. Cunningham, M.D., FAAEM, FAEMS

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RE: The Impact of High Potency Opioids on EMS, First Response, and Healthcare Communities

The national opioid crisis has recently become more challenging due to an increase in the incidence of potent substances being mixed with heroin or abused primarily. In Ohio, the death rate from accidental drug overdose now exceeds that for motor vehicle crashes. There have been several instances where the death rates from opioids have been so high that county morgues have reached or exceeded their capacity to the point where deceased persons have been diverted to other facilities for storage.

High potency opioid abuse, in the form of fentanyl, carfentanil, and synthetic opioids (e.g. W-18), is skyrocketing, and there has been a resurgence in the incidence of methamphetamine abuse. In addition, there have been documented fatal opioid overdoses in Georgia involving analogues of fentanyl (modifications of fentanyl at the molecular level), specifically acrylfentanyl and tetrahydrofuran fentanyl, which also have a higher potency than heroin or morphine. High potency opioids have been detected as a deadly component of illegally produced tablets that are disguised as a legally prescribed narcotic imprinted with a name or code similar to a manufacturer's pharmaceutical identification. "Grey death", a mixture of a variety of opioids that may also include methamphetamine, has also infiltrated Ohio.

The growing problem involving opioids in our nation and in Ohio has driven a shift in the paradigm of patient and responder safety measures and naloxone administration practices. For the EMS community and non-medical first responders, the advent of high potency opioids is cause for heightened situational awareness and a reiteration of the importance of personal protective equipment (PPE).

The following is a brief review of the substances that, in addition to heroin and other legally prescribed narcotics, are playing a significant role in today's opioid crisis.

Mission Statement

"to save lives, reduce injuries and economic loss, to administer Ohio's motor vehicle laws and to preserve the safety and well being of all citizens with the most cost-effective and service-oriented methods available."

Fentanyl: Fentanyl is 50-100 times more potent than morphine. It is legally manufactured in an injectable and oral liquid, tablet, and transdermal (worn as a patch) forms.

Fentanyl Analogues: There are several fentanyl analogues, and they are also more potent than morphine. Acrylfentanyl and tetrahydrofuran fentanyl have a longer half-life than fentanyl and may require larger and/or more frequent doses of naloxone to achieve reversal of respiratory depression.

Carfentanil: Carfentanil is 10,000 times more potent than morphine. Carfentanil is legally produced as an injectable solution that is used to sedate large animals. In the concentration in which it is manufactured (3 mg/ml), an intramuscular dose of 2 ml of carfentanil will sedate an elephant. Illegally produced carfentanil is in the powder form. There is currently little information on the effects, absorption, or bioavailability of the powdered form of carfentanil via topical contact to mucosal tissues or inhalation routes. The concentration of carfentanil that is being added to other opioids is variable and unknown.

Synthetic opioids: There are a wide variety of synthetic opioids; however, the most commonly reported form is W-18. W-18 is 10,000 times more potent than morphine. W-18 has recently been found by law enforcement personnel in Canada and in the United States.

Methamphetamine: Methamphetamine is being added to opioids by drug dealers to enhance the user's "high" and with the erroneous assumption that this stimulant may counteract the respiratory depression associated with opioids. Clinically, the respiratory depression from the opioid will be unchanged and will occur. However, following the administration of naloxone and reversal of the opioid, the effect of the methamphetamine may be exhibited with an amplified level of agitation and restlessness in the patient. The volume of methamphetamine that is being added to other opioids is variable and unknown.

While we often focus on emergency response and patient care, planning and preparedness cannot be neglected. The initial and ongoing completion of a local or regional risk/threat assessment can provide valuable information that is helpful in determining effective administrative and operational protocols as well as appropriate resource utilization. As an example, the Ohio Department of Public Safety, Division of EMS recently extracted data from the Ohio Trauma Registry to assess where multiple doses of naloxone were administered to a patient. While not entirely scientific, this information may be helpful to identify locations where high potency opioid overdoses are occurring. The following actions may be helpful to an EMS agency as part of a jurisdictional risk/threat assessment for trends in opioid abuse.

1. Contact your local hospitals, emergency care centers, coroners, and public health agencies to obtain data on the incidence and trends of opioid overdoses in your

jurisdiction that involve high potency opioids and/or methamphetamine or other amphetamines.

NOTE: Synthetic opioids are usually not detected by routine drug screens performed at emergency care centers of hospitals. Unfortunately, the coroner is often the best source of information when tracking the incidence of abuse for this class of opioids.

2. Obtain and review the data from your EMS agency and/or jurisdiction to identify the locations and/or track the incidences where the administration of multiple doses of naloxone has been required to reverse the respiratory depression of a patient.
3. Data from the Ohio Trauma Registry is available upon request. Although an individual EMS agency's data will not be provided to other organizations, an individual EMS agency can request their own data or a county/regional report.

Following recent events where first responders have experienced adverse effects from the presence of opioids on scene, documents are being released with guidance for first responder protection and response. Examples include the *Fentanyl: A Briefing Guide for First Responders* issued by the Drug Enforcement Administration

(http://www.publicsafety.ohio.gov/links/DEA-Fentanyl_Briefing_Guide_for_First_Responders-June_2017.pdf), *Fentanyl: Preventing Occupational Exposure to Emergency Responders*

issued by the National Institute for Occupational Safety and Health (NIOSH) that is posted on the website of the Centers for Disease Control and Prevention (CDC)

(<https://www.cdc.gov/niosh/topics/fentanyl/risk.html>), and *Preventing Occupational Fentanyl and Fentanyl Analog Exposure to Emergency Responders*, a position statement issued by the American College of Medical Toxicology and the American Academy of Clinical Toxicology (http://www.acmt.net/Library/Fentanyl_Position/Fentanyl_PPE_Emergency_Responders_.pdf)

There is little literature available on the bioavailability, absorption, and onset of action of many of the illegally produced high potency opioids. While many of the emerging recommendations are directed at non-medical first responders, EMS providers have the additional responsibility and advanced training to provide emergent medical treatment to the patients for whom they have been dispatched. While there is no standard regimen applicable to every scenario, it is important for EMS agencies, EMS medical directors, healthcare organizations, and public safety agencies to collaborate during the development of the response plans for patients with opioid overdose. As your EMS agency focuses on the patient care delivery aspect within the opioid crisis, the Ohio Department of Public Safety, Division of EMS suggests the consideration of the following actions:

1. Personal protective equipment should be donned for all patient encounters regardless of suspected etiology of the patient's condition. **Personal protective equipment only works if you wear it.** The donning of the appropriate level of personal protective

equipment should be implemented each and every day with or without the presence of a healthcare crisis.

2. For those jurisdictions that are experiencing an increased incidence of overdose involving high potency opioids, consider the utilization of additional PPE that is appropriate to the patient scenario, the scene, and the risk/threat assessment. Dependent upon these factors, the appropriate PPE may include donning nitrile gloves, eye protection, a higher level of respiratory protection, gowns, and/or shoe covers.
3. For those jurisdictions that are experiencing an increased incidence of overdose involving methamphetamine, EMS providers should review their EMS and/or HAZMAT protocols for methamphetamine. While methamphetamine cannot be visually identified within a powder, the presence of ephedrine (over-the-counter cold tablets), containers of ethyl ether (engine starting fluid) or muriatic acid, and Pyrex[®] dishes are some of the key items used to make methamphetamine and may be clues that the scene is also a methamphetamine lab.
4. EMS medical directors may wish to provide flexibility within their EMS opioid overdose protocols to permit higher and/or more frequently administered doses of naloxone for the reversal of respiratory depression due to high potency opioids.
5. EMS medical directors should facilitate the acquisition and assess the maintenance of the EMS provider's pediatric and neonatal skills for the treatment of this patient population in the face of an opioid overdose. Sadly, the incidence of accidental opioid overdose in the pediatric population has increased when legally prescribed or illegal opioids are in the possession of the custodial adult or present in the child's residence.
6. EMS providers should communicate the presence of children, elderly, or other potentially vulnerable persons at the scene of an opioid overdose to the emergency department and/or social services staff as an element of injury prevention similar to our practice with suspected or confirmed abuse or neglect.

As stated previously, there are many factors that remain unknown regarding the high potency opioids and their impact upon the safety of the patient and their caregivers. The Ohio Department of Public Safety, Division of EMS will continue to communicate any recommendations from our national EMS organizations and healthcare stakeholders to Ohio EMS via our website (www.ems.ohio.gov) and the Division of EMS subscriber service. The information to enroll in the Division of EMS subscriber service is provided on the home page of our website.

Thank you for your ongoing dedicated service to Ohio and stay safe!