

Opioid Overdoses- The Epidemic  
And it's Effect on the City of Fairfield, Ohio

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## CERTIFICATION STATEMENT

I hereby certify that the following statements are true:

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## ABSTRACT

The problem that this descriptive research study addressed was the financial burden that the local opioid epidemic placed on the City of Fairfield, OH and how it affected the emergency resource capabilities of the city. The purpose of this research study identified and described the extent to which the opioid drug abuse epidemic affected the City of Fairfield, OH. This study also identified what the Fairfield Fire Department, the Fairfield Police Department, and other Southwestern Ohio fire departments have done to address the opioid drug crisis. The following questions were answered by this descriptive research study: 1) To what extent has the opioid drug epidemic affected the City of Fairfield? 2) What has the City of Fairfield done to address the increase in opiate-based drug overdoses? 3) What have some other fire departments and agencies in Southwestern Ohio done to address the opioid drug epidemic? Procedurally, interviews were conducted with City of Fairfield personnel to show how the epidemic has affected the city and what the city has done to address the increase in opioid overdoses. A survey was conducted to see what other departments in Southwestern Ohio have done to address the same issue. These procedural results showed that even though the City of Fairfield had experienced an increase in opioid related emergency calls, this increase was much lower by average than that of the State of Ohio and the nation. This study discussed recommendations centered around patient care reporting and data collection, tracking lost billing revenue, obtaining grant money to offset opioid related costs, and establishing a quick response team as part of a collaborative approach to the opioid epidemic. Also, further research was recommended to be completed on how new federal and state drug and opioid mandates are affecting the opioid epidemic.

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## INTRODUCTION

### **Statement of the Problem**

Every day in the United States, more than 90 Americans die after overdosing on opioids (Rudd, Seth, David, & Scholl, 2016). The U.S opioid epidemic is continuing, and drug overdose deaths nearly tripled during 1999-2014 (Rudd, Seth, David, & Scholl, 2016). Of the 47,055 drug overdose deaths that occurred from 1999-2014, 28,647 (61 %) involved an illicit opioid (Rudd, Seth, David, & Scholl, 2016). The Fire and EMS service of today has found itself at the forefront of this epidemic (Garza & Dyer, 2016). The misuse of and addiction to opioids—including prescription pain relievers, heroin, and synthetic opioids such as fentanyl—is a serious national crisis that affects public health as well as social and economic welfare (National Institute of Health, Jun 2017). Prescription opioid overdose, abuse, and dependence carry high costs for our society, with an estimated total economic burden of \$78.5 billion (Curtis S Florence, 2016). There is an urgent need for a multifaceted, collaborative public health approach to the opioid epidemic (Rudd, Seth, David, & Scholl, 2016).

The City of Fairfield Fire Department has experienced a significant increase in opiate-based overdoses over the past 13 years (City of Fairfield, 2004-2016). This increase of opiate overdoses occurring within the City of Fairfield (City of Fairfield, 2004-2016) is consistent with that which is occurring nationally across the United States (Rudd, Aleshire, Zibbell, & Gladden, 2016) (Rudd, Seth, David, & Scholl, 2016) as well as within the state of Ohio (Ohio Department of Health, 2016). According to the City of Fairfield Fire Department incident statistics, there were 28 patients (1.2% of the total number of patients) treated for poisoning/drug ingestion in 2004, in which a total of 16 doses of Narcan were administered to these patients by paramedics

(City of Fairfield, 2004-2016). According to the same statistics for 2016, the City of Fairfield Fire Department responded to 101 patients (3.2% of the total number of patients) for poisoning/drug ingestion in which a total of 193 doses of Narcan were administered (City of Fairfield, 2004-2016). As of July 25, 2017, the City of Fairfield Fire Department Paramedics have administered 161 doses of Narcan (year to date). (City of Fairfield, 2004-2016). This is an annual increase of 65 % for the same time of a year ago in which 105 doses of Narcan were administered (City of Fairfield, 2004-2016).

The problem that this descriptive research study will address is that the local opiate-based drug epidemic is placing a financial burden on the City of Fairfield while at the same time affecting the emergency resource capabilities of the city.

### **Purpose of the Study**

The purpose of this descriptive research study is to identify and describe the extent to which the opioid drug abuse epidemic (Garza & Dyer, 2016) has affected the City of Fairfield. This study will also identify what the City of Fairfield, the Fairfield Fire Department, the Fairfield Police Department, other Southwestern Ohio fire departments, and county agencies have done to address the opioid drug crisis (National Institute of Health, Jun 2017).

### **Research Questions**

The following questions will be answered by this descriptive research:

1. To what extent has the opioid drug epidemic affected the City of Fairfield?
2. What has the City of Fairfield done to address the increase in opiate-based drug overdoses?

3. What have some other fire departments and agencies in Southwestern Ohio done to address the opioid drug epidemic?

### **BACKGROUND AND SIGNIFICANCE**

The City of Fairfield is in Southwestern Ohio, north of Cincinnati and within Butler County. The Fairfield Fire Department is a combination fire department employs 27 full-time employees and approximately 65 part-time employees and operates from three fire stations. The Fairfield Fire Department provides firefighting, rescue, and emergency medical services (EMS) at the paramedic level (advanced life support) for the City of Fairfield. The City of Fairfield is 21 square miles and consists of a community of approximately 43,917 residents (United States Department of Commerce, 2010). The fire department responded to 915 fire calls and 4,972 EMS calls in 2015 (City of Fairfield, 2016).

The City of Fairfield and its community are experiencing a similar trend in opiate-based drug overdoses similar to that of the nation (Rudd, Aleshire, Zibbell, & Gladden, 2016) (Rudd, Seth, David, & Scholl, 2016) and that of the State of Ohio (Ohio Department of Health, 2016). There is now an urgent need for a multifaceted, collaborative public health and law enforcement approach to combat and control the opioid epidemic (Rudd, Seth, David, & Scholl, 2016). The overall goal of this collaborated approach (Rudd, Seth, David, & Scholl, 2016) is to reduce the occurrences of opioid overdoses occurring within the community. This reduction in the number of occurrences will in turn reduce the financial burden of these overdoses on the City of Fairfield's operational budgets of both their police and fire departments. Having less opioid overdose emergencies to respond to will benefit the emergency resource capabilities for the City of Fairfield as both the Fairfield Police and Fairfield Fire Departments would be available to

respond to other emergencies within the city. This collaborative approach will offer public health agencies and law enforcement specific guidelines, programs, medications, treatments, and strategies to reduce the occurrence of opioid overdoses (Rudd, Seth, David, & Scholl, 2016).

The increase in opioid overdoses for the City of Fairfield Fire Department (City of Fairfield, 2004-2016) has caused an economic burden on the City of Fairfield and has caused the city to more efficiently, effectively, and financially mitigate opioid overdoses occurring within its community. The opioid drug problem occurring locally here in southwestern Ohio (Stobino, 2015) is similar in nature and extent to that which is occurring throughout the state of Ohio (Ohio Department of Health, 2016) and throughout the United States (Rudd, Aleshire, Zibbell, & Gladden, 2016). The continual, steady increase of opiate overdoses is concerning to the Fairfield Fire Department (City of Fairfield, 2004-2016) as it is spending more money and using more department resources to mitigate this type of medical emergency (C. Cooper, personal communication, December 5, 2016). This monetary increase of department spending is representative of the cost of the antidote, EMS supplies, vehicle maintenance and fuel costs, as well as the cost for hourly wages for fire department personnel who are responding to this type of medical emergency (C. Cooper, personal communication, December 5, 2016). The results from this descriptive research study will be used to show to what extent has the opioid drug epidemic (Rudd, Aleshire, Zibbell, & Gladden, 2016) affected the City of Fairfield, what the City of Fairfield has done to address the increase in opiate-based drug overdoses, and what some other fire departments and agencies in southwestern Ohio have done to address the opioid drug epidemic (Rudd, Seth, David, & Scholl, 2016). The significance of this study is that the Fairfield Fire Department will become aware of the need to develop a multifaceted approach with the



entire healthcare community to bring about real change to annually reduce the burden which is being caused from this epidemic (Garza & Dyer, 2016).

## **LITERATURE REVIEW**

In order to understand exactly how this opioid drug epidemic (Garza & Dyer, 2016) is affecting our nation and impacting our emergency medical services (EMS), an understanding must be gained as to what opioids are and how this drug epidemic (Garza & Dyer, 2016) came to be as it is today (Garza & Dyer, 2016). Opioids are a type of narcotic pain medication prescribed by a physician to treat moderate to severe pain that may not respond well to other pain medications (Khatri, 2017). Opioids can make a dramatic difference to people with moderate to severe pain and can be an effective form of therapy if the medications are used safely while carefully following the doctor's instructions (Khatri, 2017). The term narcotic refers to a drug (such as codeine, methadone, or morphine) that in moderate doses dulls the senses, relieves pain, and induces profound sleep but in excessive doses causes stupor, coma, or convulsions (Merriam Webster, 2017). An opioid is a synthetic drug that possesses the same narcotic properties characteristic of opiates, but are not derived from opium (Merriam Webster, 2017). An opiate is a natural or semi-synthetic drug containing of or derived from opium that tends to induce sleep or alleviate pain (Merriam Webster, 2017). Opioids are a class of drugs that include the illegal drug heroin, synthetic opioids such as fentanyl, and pain relievers available legally by prescription, such as oxycodone (OxyContin®), hydrocodone (Vicodin®), codeine, morphine, and many others (National Institute of Health, Jul 2017). Opioid drugs work by binding to opioid receptors in the brain, spinal cord, and other areas of the body and reduce the sending of pain messages to the brain, which reduce feelings of pain (Khatri, 2017). Some other types of opioid drugs include: Dilaudid, Demerol, methadone, and Percocet (Khatri, 2017). Opioid pain

relievers are generally safe when taken for a short time and as prescribed by a doctor, but because they produce euphoria in addition to pain relief, they can be misused (taken in a different way or in a larger quantity than prescribed or taken without a doctor's prescription) (National Institute of Health, Jul 2017). Regular use—even as prescribed by a doctor—can lead to dependence and, when misused, opioid pain relievers can lead to overdose incidents and deaths (National Institute of Health, Jul 2017) An opioid overdose can be reversed with the drug naloxone when given right away (National Institute of Health, Jul 2017). The drug antidote naloxone (Narcan) counteracts the effects of an opiate-based overdose (Academy of Medicine of Cincinnati, 2016). Although naloxone can reverse immediate effects of an overdose, it doesn't fix the underlying problem of opioid addiction (Garza & Dyer, 2016). Patients who receive naloxone are at high risk of continuing to use opioids and again experience a life-threatening overdose (Garza & Dyer, 2016).

The opioid epidemic began in the mid-1990s with the introduction of OxyContin (oxycodone) to the market by Purdue Pharmaceuticals (Garza & Dyer, 2016). Prior to this, most oral opiates were reserved for people with significant chronic pain, such as cancer patients (Garza & Dyer, 2016). However, creators of OxyContin and subsequent opioid analgesics downplayed the possibility of addiction, and the new narcotic was aggressively marketed to physicians to prescribe more widely (Garza & Dyer, 2016). In the late 1990s, pharmaceutical companies reassured the medical community that patients would not become addicted to prescription opioid pain relievers, and healthcare providers began to prescribe them at greater rates (Zee, 2009). This subsequently led to widespread diversion and misuse of these medications before it became clear that these medications could indeed be highly addictive (Zee, 2009). Opioid overdose rates began to increase. In 2015, more than 33,000 Americans died

because of an opioid overdose, including prescription opioids, heroin, and illicitly manufactured fentanyl, a powerful synthetic opioid (Rudd, Seth, David, & Scholl, 2016) (see Appendix A). That same year, an estimated 2 million people in the United States suffered from substance use disorders related to prescription opioid pain relievers, and 591,000 suffered from a heroin use disorder (Substance Abuse and Mental Health Services Admin, 2016). When opioid medications are used over an extended period, dependence on the drug can occur (Khatri, 2017). When this occurs, the body becomes so used to the drug that when the medication is abruptly stopped from being taken, withdrawal symptoms develop. (Khatri, 2017). These withdrawal symptoms include: diarrhea, nausea and vomiting, muscle pain, anxiety, and irritability (Khatri, 2017). Addiction to opioid medications can also develop (Khatri, 2017). After taking pain medication for a while, people may find that they need more of the drug to achieve the same desired effect in reducing pain (Khatri, 2017). This is called drug tolerance and is not the same as addiction which involves a compulsive use of a drug (Khatri, 2017). People who are addicted to opioids compulsively seek out pain medications and have behaviors that lead to negative consequences in their personal lives and workplace (Khatri, 2017).

With the increase in distribution of legal narcotics came the increase in addiction, overdose and deaths from all opioids (Garza & Dyer, 2016). The rapid increase in heroin abuse and addiction is attributed to the ever-increasing numbers of opioid addicts that soon grew a tolerance for oral opioids and began to require more potent and cheaper avenues to fill their addiction (Garza & Dyer, 2016).

This epidemic has proportionally grown out of control over the past 15 years (Rudd, Aleshire, Zibbell, & Gladden, 2016) and has taken a tremendous toll on lives (NIH, 2015) This drug epidemic problem is concerning because it has shown no signs of significantly slowing

down (National Institute of Health, 2016). Opioid overdose is a complex and widespread problem that won't be fixed with naloxone, law enforcement or data alone (Garza & Dyer, 2016). It will take a multifaceted approach from the entire healthcare community to bring about real change (Garza & Dyer, 2016). EMS already plays a significant role in fighting the epidemic by treating patients suffering from overdoses every day (Garza & Dyer, 2016). But the potential for EMS to play a role in the larger fight against the crisis won't be realized until EMS begins collaborating with its partners in the community as part of a coordinated effort to stop the epidemic (Garza & Dyer, 2016).

(Garza & Dyer, 2016) discuss how EMS data can be utilized to help stop the opioid epidemic. (Garza & Dyer, 2016) describe the current state of the opioid overdose problem nationwide as an “epidemic”. To better understand the opioid epidemic (Garza & Dyer, 2016) discuss this current state of drug epidemic, how this epidemic impacts EMS, and what role EMS plays in preventing fatal overdoses. Garza & Dyer discuss how EMS data can be used to help stop the opioid epidemic. Their Journal of Emergency Medical Service’s article gives a basic understanding of what opioids are, give a view of the current state of the opioid epidemic, as well as presented information on how this epidemic got to where it currently is. The authors gave additional insight on what EMS can offer in the fight against opioid overdoses and what approaches are being used to address the epidemic (Garza & Dyer, 2016). EMS is discussed as having an opportunity to help in the efforts to slow down and prevent these types of overdoses through information and education. Because the opioid overdose is a complex and widespread issue, Garza & Dyer discuss that the opioid epidemic needs to be fixed through a multifaceted approach from the entire healthcare and law enforcement community.

Khatri describes what opioid (narcotic) pain medications are, how they work, and lists four opiate-based medications that are prescribed by physicians for pain relief. This medical reference gives recommendations for medication usage and identifies side effects. This medical reference discusses problems associated with opioid medications such as stopping the medication suddenly and developing withdrawal symptoms, drug tolerance, and addiction to opioids (Khatri, 2017).

(Rudd, Aleshire, Zibbell, & Gladden, 2016) refer to the opioid drug overdose problem in the United States as an epidemic and state the fact that the United States had recorded the highest number of opioid overdose deaths in 2014. (Rudd, Aleshire, Zibbell, & Gladden, 2016) discuss the opioid drug overdose deaths from this drug epidemic in the United States from 2000-2014 in a Morbidity and Mortality Weekly Report (MMWR) with the Centers for Disease Control (CDC). This report has shown that since 2000, the rate of death from opioid drug overdoses has increased 200% for all opioid pain relievers and heroin. Also reported is the fact that this opiate overdose epidemic has progressively grown out of control and has been on a steady increase nationally from 2000-2014 (see Appendix A).

In a subsequent MMWR report with the CDC at the end of 2016, (Rudd, Seth, David, & Scholl, 2016) also refer to the opioid overdose problem in the United States as an epidemic and give statistics for opioid overdose deaths between 1999 and 2014. In their report, (Rudd, Seth, David, & Scholl, 2016) describe the need for a multifaceted, collaborative, healthcare and law enforcement approach to combat and control the opioid epidemic. Lastly, the report gives a 2015 statistic showing another annual increase in the U.S drug overdose death rate and includes statistics for how many of these drug overdose deaths had involved opioids.

(National Institute of Health, Jan 2017) shows national trends and statistics for overdose deaths resulting from opioid drugs, prescription opioid pain relievers, and heroin from 2002-2015. (See Appendix A). These 2017 NIH statistics shows nearly a 3- fold increase in the number of overdose deaths that have occurred from opioid drugs and a 6- fold increase in the number of heroin overdose deaths from 2002 to 2015. During that same period, the national number of deaths from prescription pain relievers rose from nearly 9,000 deaths in 2002 to nearly 18,000 deaths in 2015. (National Institute of Health, Jun 2017) refers to the opioid drug problem as a crisis. (National Institute of Health, Jun 2017) discusses the misuse and addiction to opioids as being a serious national crisis that affects both public health and social economic welfare. (National Institute of Health, Jul 2017) lists the illegal drug heroin as an opioid, fentanyl as a synthetic opioid, and provides a list of several opioid pain relievers that are available legally by prescription. This article states that the opioid pain relievers are generally safe when taken for a short period of time and as prescribed by a physician. (National Institute of Health, Jul 2017) that because these medications produce euphoria in addition to pain relief, they can be used in a way that is different from the way the medication was prescribed by a physician. Regular use (Physician prescribed) of opioid pain relievers can lead to dependence and, when misused, can lead to overdose incidents and deaths. (National Institute of Health, Jul 2017) states that an opioid overdose can be reversed with the drug naloxone when given right away.

There are statistics at the national, state, and local levels of government that show there are statistical similarities and consistencies with which each of these different levels of government are being affected by the opioid overdose epidemic. This statistical data nationally (Rudd, Seth, David, & Scholl, 2016) (Rudd, Aleshire, Zibbell, & Gladden, 2016), state-wide (Ohio Department of Health, 2016), and locally (Strobino, 2015) (City of Fairfield, 2017) show the

extent to which opiate-based overdoses and deaths associated with these overdoses are prevalent. In reviewing opioid overdose statistics nationally, (National Institute of Health, Jan 2017) shows national trends and statistics for overdose deaths resulting from opioid drugs, prescription opioid pain relievers, and heroin from 2002-2015. The 2017 NIH statistics show nearly a 3-fold increase in the number of overdose deaths that have occurred from opioid drugs and a 6-fold increase in the number of heroin overdose deaths from 2002 to 2015. During that same period, the number of deaths nationally from prescription pain relievers rose from nearly 9,000 to nearly 18,000. In 2014, the Centers for Disease control and prevention (CDC) reported the noteworthy fact that the United States recorded the highest number of opioid overdose deaths in the nation's history (Garza & Dyer, 2016; Rudd, Aleshire, Zibbell, & Gladden, 2016). Just one year later in 2015, the U.S drug overdose death rate rose to 52,404 deaths, of which 33,091 (63 %) involved and opioid (Rudd, Seth, David, & Scholl, 2016). These are staggering numbers that reflect a cost to individuals, their families and society at large (Garza & Dyer, 2016). According to data published in the January 1, 2016 and the December 31, 2016 issues of the CDC's Morbidity and Mortality Weekly Report, the United States is experiencing an epidemic of drug and opioid overdose deaths (Rudd, Aleshire, Zibbell, & Gladden, 2016) (Rudd, Seth, David, & Scholl, 2016). Since 2000, there has been a 200% national increase in the rate of overdose deaths involving opioids (opioid pain relievers and heroin) (Rudd, Aleshire, Zibbell, & Gladden, 2016). The statistics mentioned above represent a steady increase nationally in the number of opiate based drug overdoses for a 15-year period from 2000-2014 (Rudd, Aleshire, Zibbell, & Gladden, 2016) and from 2010-2015 (Rudd, Seth, David, & Scholl, 2016).

A 2015 report from the Ohio Department of Health using statistics from the Ohio Department of Health, Bureau of Vital Statics, shows that there were 1,155 fentanyl-related drug overdose

deaths in the State of Ohio in 2015 (Ohio Department of Health, 2016). See figure 4. This represents over double the number of similar overdose deaths from the year before and 38% of the total number of unintentional overdose deaths for Ohio Residents in 2015 (Ohio Department of Health, 2016). Fentanyl related overdose deaths were the highest among persons 25-34 years of age (32 percent); and males (70.5 percent) were nearly 2 and a half times more likely to die from fentanyl related overdose compared to women (Ohio Department of Health, 2016). Heroin-related deaths accounted for 1,424 unintentional overdose deaths in 2015, an increase from 1,196 in 2014. These heroine related deaths represented 46.7% of the total number of unintentional drug overdose deaths in Ohio in 2015. See table 1. In two 2015 reports, one by the Ohio Department of Health, and one by the Hamilton County Public Health Department using statistics from the Ohio Department of Health, Bureau of Vital Statics and the National Institute on Drug Abuse (NIDA), shows how fentanyl overdose deaths have increased statewide as well as locally in Hamilton County between 2014 and 2015 (Strobino, 2015; Ohio Department of Health, 2016). See figures 5 and 6. Fentanyl overdose deaths have become an emerging public threat in Hamilton County as it is now the second leading cause of opioid overdose deaths behind Heroin (Strobino, 2015). The report also shows an age distribution of drug overdose deaths related to fentanyl and other opioids as well overdoses deaths of fentanyl and other drug combinations (Strobino, 2015). The opioid drug overdose data for Hamilton County (OH) (Strobino, 2015) is statistically like the opioid overdose data for the State of Ohio (Ohio Department of Health, 2016).

Within nearly that same period (2004-2016), the City of Fairfield Fire Department had also experienced an increase in the number of opiate-based drug overdoses (City of Fairfield, 2004-2016). The City of Fairfield Fire Department's electronic patient care reporting system



(Emergency Reporting) has reports showing increases in the number of Narcan administrations by paramedics for overdose patients from 2004 to 2016 (City of Fairfield, 2004-2016). In 2004, the City of Fairfield Fire Department Paramedics administered a total of 16 doses of Narcan for the year compared to a total of 220 doses of Narcan being administered for the year in 2016 (City of Fairfield, 2004-2016). The fire department has given 217 doses through the third quarter of 2017 and it's estimated that the department paramedics will administer a total of 289 doses by the end of 2017 (C. Cooper, personal communication, Jan. 3, 2018). Not only has the number of antidote (Narcan) (Academy of Medicine of Cincinnati, 2016) administrations increased (City of Fairfield, 2004-2016), but the cost of the antidote has also increased. In 2004, the cost of a single vial of Narcan for the City of Fairfield Fire Department was approximately \$1 (C. Cooper, personal communication, December 5, 2016). The cost to the City of Fairfield Fire Department for the same vial of Narcan is just over \$30 a vial today (C. Cooper, personal communication, December 5, 2016). This is now coupled with the fact that today's substantial increase in the occurrence of opioid overdoses results in the Fairfield Fire Department EMS services administering a substantially higher number of antidote dosages annually (City of Fairfield, 2004-2016). These statistical reports show an increase drug overdose related EMS calls handled by the City of Fairfield Fire Department for a 12-year period beginning in 2004 (City of Fairfield, 2004-2016). Two reports from the fire department's EPCR reporting system statistically show a substantial increase in EMS calls for poisoning/drug ingestion, and the number of times in which the medication Narcan had been administered as an antidote to a suspected narcotic overdose within that timeframe (City of Fairfield, 2004-2016)

The City of Fairfield 2016 Annual Report places the annual operating costs for the fire department at \$5.8 million dollars. For the 2016 year, the fire department responded to 5,887

total calls for service of which 4,972 (84%) were EMS runs (City of Fairfield, 2016). In November of last year, the Fairfield residents approved a 2.5 mil levy to generate an additional \$2.38 million dollars to support fire department operations over the next 10 years (City of Fairfield, 2016). In 2016, due to falling revenues from EMS billing, the fire department was additionally funded from the city's general fund in which it required \$1.2 million additional dollars from that fund just to sustain fire department operations (City of Fairfield, 2016). The Fairfield Fire Department is not normally funded from the city's general fund but instead from an existing 15-year-old levy from 2001 and EMS billing revenues (City of Fairfield, 2016). The Fairfield Fire Department Paramedics operate from within the medical authority of the Academy of Medicine of Cincinnati -Protocols for Southwest Ohio (Academy of Medicine of Cincinnati, 2016). With regards to opiate overdoses, paramedics operating under the auspices of this protocol would be utilizing multiple medical protocols including those for the treatment of altered mental status, respiratory distress, toxicological emergencies, respiratory arrest, and cardiac arrest (Academy of Medicine of Cincinnati, 2016). For the treatment of a symptomatic opiate overdose, paramedics can give an overdose victim the antidote Narcan, which can be administered by intranasal, intramuscular, intravenous, or intraosseous means (Academy of Medicine of Cincinnati, 2016).

In 2013, prescription opioid overdose, abuse, and dependence carried with it high costs for the American society, with an estimated total economic burden of over \$78.5 billion (Curtis S Florence, 2016). "Families and communities continue to be devastated by the epidemic of prescription opioid overdoses and the rising cost of the epidemic is also placing a tremendous burden for the health care system" said CDC Director Tom Frieden, MD, MPH (Wilkins, 2016). Using data from a wide range of sources, researchers estimated the "monetized burden" of

prescription opioid overdose, abuse, and dependence in the United States from a societal perspective- including direct healthcare costs, costs related to loss of productivity, and costs to the criminal justice system (Curtis S Florence, 2016). Based on the latest data, nearly two million Americans met the criteria for prescription opioid abuse and dependence in 2013 which resulted in 16,000 deaths from prescription opioid overdose (Curtis S Florence, 2016). In 2013, the total spending for health care and substance abuse was over \$28 billion, in which \$26 billion as covered by health insurance (Curtis S Florence, 2016). In non-fatal cases, costs for lost productivity, including that of incarcerated individuals were estimated at \$20 billion (Curtis S. Florence, 2016). Overall, nearly one- fourth of the economic burden was funded by public sources which included costs funded by private insurance (Medicaid, Medicare, and veterans programs) and other government sources for substance abuse treatment (Curtis S Florence, 2016). There were also \$7.7 billion in criminal justice –related costs (Curtis S Florence, 2016).

## **PROCEDURES**

Descriptive research was used as the basis for this research paper. This form of research was chosen to portray an accurate account of the state of the opioid epidemic. Descriptive research was used to describe the characteristics of the epidemic and the conditions in which it is currently found, as well as the relationships of groups of people, agencies, and individuals that are involved or have a role in the epidemic itself. The original research for this paper was conducted using primarily online resources which discussed the current state of the opioid overdose epidemic throughout the nation, the State of Ohio, and locally in Southwestern Ohio as well as those which offered background information as to how exactly we as a nation arrived at this problem. A significant number of online resources were utilized which consisted of

national, state, and local government agencies that are at the forefront of this drug epidemic. These resources were data driven resources that were used show statistics for the opioid epidemic from a national and state point of reference so that these statistics could be compared to those of the City of Fairfield Fire Department. This statistical information was used to determine to what extent the opioid epidemic was affecting the City of Fairfield compared to that of nearby Hamilton County, the State of Ohio, as well as nationally. Other publications that were reviewed as a basis for this research paper consisted of published journal articles in both emergency medical services and medical journals in which emphasis was placed on the worsening of this national epidemic. Specific data and information were also obtained from the City of Fairfield Fire Department and other fire departments of Southwestern Ohio to highlight how this problem has affected local levels of government, and what these government entities were doing to address the local opioid drug problem. This information was obtained through a series of interviews with personnel from the City of Fairfield Fire Department as well as a survey for selected fire departments of Southwestern Ohio.

These interviews were conducted with administrative personnel from the City of Fairfield Fire Department and Police Department and were designed to obtain an understanding of how the opioid drug problem was affecting the City of Fairfield and what the City of Fairfield was doing to address the problem. The administrative personnel that were chosen for an interview were personnel who have been directly involved with addressing the opioid drug problem locally within the City of Fairfield as well as that occurring in Southwestern Ohio. Thus, being directly involved with local government operations which are currently addressing the local opioid epidemic, these personnel have a firsthand knowledge this problem and what is being done at

both the local and county level and are the most qualified to interview and offer the most validity to this research project.

The interview process was designed by the author of this paper, with the questions that were asked being directly related to obtaining answers to the first two proposed research questions. The interview itself was comprised of 16 total questions, not all of which pertained or were applicable to every administrative person being interviewed. There were five interviews that were completed. Three of the interviews were completed in person and 2 of the interviews were completed by phone conference. The interviews lasted anywhere from 15 minutes to 45 minutes, which was dependent upon the number of questions asked and the length of time the interviewee spent answering the questions and offering knowledge of the question being asked. The administrative personnel that were chosen from the City of Fairfield consisted of the following: (1) EMS Lieutenant (Lt. Chad Cooper) in charge of tracking opioid data and maintaining budgetary reports for emergency medical service (EMS) Supplies, (1) EMS Lieutenant and member of the Fairfield Fire Department's Quick Response Team (QRT) (Lt. Jamie Viers), (1) Deputy Chief of EMS Operations and member of QRT (DC Tom Wagner), (1) EMS Billing Representative from EMS Connect Kentucky (Christine Bellman), and (1) police department Lieutenant (Lt Steve Maynard) in charge of narcotic operations and also a member of the QRT.

Specifically chosen fire department administrative personnel from other surrounding departments within Butler and Hamilton Counties were given an online survey to complete. These administrative personnel were the officers of their departments charged with administrative duties associated with the opioid epidemic. The survey itself was designed by the author of this paper, with the questions that were asked being directly related to obtaining answers to the third of three proposed research questions. The survey itself was comprised of 9

total questions, not all of which pertained or were applicable to every administrative person being interviewed. The survey was designed by this author using the free online resource and web site Survey Monkey. The survey was also administered by the web site Survey Monkey. There were 17 surveys that were completed out of 22 total surveys sent out. This represented a return rate of 77% of the total number of surveys sent out. The surveys took 2-3 minutes to complete on average.

### **Limitations of study**

- 1). How EMS information and specific data contained in the patient care report is entered or coded (by the personnel entering this information) in the emergency reporting software.
- 2). How the EMS reporting database is set up with specific data coding to capture the specific data related to opioid overdoses.
- 3). The billing privacy officer for the Fairfield Fire Department was unable to determine the number of opioid related calls for service that resulted in lost revenue.
- 4). Fairfield Fire department data was unable to determine the number of opioid overdose deaths in any specific time period due to not collecting data.
- 5). Fairfield Fire department data was unable to determine the number of opioid-related emergency medical runs during any specific time period due to not collecting data.

## **RESULTS**

### **Interviews**

#### **Question 1: How has the opioid epidemic affected your department?**

The consensus amongst all interviewees was that the opioid epidemic has affected the City of Fairfield in a negative way from both an operational and financial standpoint. From a fire department perspective and per Lt. Chad Cooper, it has been determined that the opioid epidemic

has strained the fire department operationally, but that this strain has been minimal. The operational strain on EMS resources (medic units and personnel), although minimal, was more prevalent during short periods of time in which the department was seeing clustered periods of opioid overdoses. Lt. Jamie Viers had mentioned that the opioid epidemic has affected fire department personnel in a negative manner due to the prolonged nature of the epidemic and personnel encountering and treating overdose patients who are repeat overdose offenders. Lt. Viers stated “sometimes you lose the passion to help”. He stated that the opioid epidemic “is a disease vs. moral choices”. From an EMS billing standpoint, Christine Bellman advised that the fire department is consistently unable to recover costs for service from these patients. The reasons for this cost recovery problem will be discussed later in this section. Lt. Steve Maynard stated that this drug problem has also negatively impacted the police department’s personnel to respond to other calls for service in the city and taking away time for other needed services. Lt. Maynard stated that the opioid epidemic has not financially impacted the police department.

**Question 2: What has your department done to address the increase in opioid drug abuse and overdoses?**

Lt. Cooper stated that the fire department has begun to track data specific to opioid drug overdoses that the fire departments EMS services responds to (C. Cooper, personal communication, Jan. 3, 2018). This data is being tracked within the department’s Emergency Reporting Software. This software is used for EMS patient care report entry. Specific data in the form of reports can be extracted from the software. One specific change the fire department has made with regards to data collection is that the opioid overdoses are now charted in the patient care report in a custom field, which a report can be generated from the data entered into this custom field (C. Cooper personal communication, Jan 3, 2018). Thus, the number of opioid

overdoses can now be tracked (C. Cooper, personal communication, Jan 3, 2018). The number of Narcan (antidote) doses being administered by fire department personnel are being tracked from the EMS software (C. Cooper, personal communication, Jan. 3, 2018). The number of Narcan doses are also being independently tracked by Lt. Cooper according to supply orders that are being placed to Mercy Hospital of Fairfield's Pharmacy for the antidote (see Appendix A)(C. Cooper, personal communication, Jan. 3, 2018). Lt Cooper additionally tracks the administration of Narcan doses that are received from the Butler County Health Department (BCHD) (see Appendix A). Per Lt. Cooper, the BCHD gives the Butler County fire departments free doses of Narcan to supplement their Narcan supply (C. Cooper, personal communication, Jan. 3, 2018). This offer is part of a state grant program to reduce the number of opioid overdose deaths (C. Cooper, personal communication, Jan. 3, 2018). The fire department received a total of 170 free doses of Narcan in 2016 and 2017 (C. Cooper, personal communication, Jan. 3, 2018). Lt Cooper also stated that he was involved in a recent protocol review in which the timeframes of Narcan administration were looked at to make sure department paramedics were giving the antidote at appropriate time intervals (C. Cooper, personal communication, Jan. 3, 2018). The protocol review and data showed that the Fairfield Fire Department paramedics were properly administering Narcan at the recommended intervals and that the medication was being used efficiently with effective results (C. Cooper, personal communication, Jan. 5, 2018).

A quick response team (QRT) has also been established by the Fairfield Fire Department and Fairfield Police Department as part of a joint effort to address the opioid drug problem in the City of Fairfield (T. Wagner, personal communication, Jan. 3, 2018). The QRT is comprised of two members of the fire department (DC Wagner and Lt. Viers), one member of the police department (Lt. Maynard), and an Opiate Recovery Outreach Coordinator from Butler County



Behavioral Health (Umona Sharp) (T. Wagner, personal communication, Jan. 3, 2018). The QRT was established and implemented to reduce repeat drug-related interventions and create healthier communities by providing rapid connection to drug treatment (U. Sharp, personal communication, Oct. 27, 2017). The QRT will attempt to meet with opiate overdose patients and provide them with the necessary resources to obtain treatment for their addiction (T. Wagner, personal communication, Jan. 3, 2018). Informational recovery packets are also being mailed out to the residences of overdose patients (J. Viers, personal communication, Jan. 4, 2018). These informational packets give overdose victims specific informational resources (mental, behavioral, and financial services) to be able to obtain help and support for their addiction (J. Viers, personal communication, Jan. 3, 2018). Lt. Viers stated that he has recently mailed out 50 informational recovery packets and only got two returned to him from patients who had overdosed on opioids and actively wanted to seek assistance (J. Viers, personal communication, Jan. 3, 2018).

The Fairfield Police Department charges offenders of narcotic overdoses with disorderly conduct, a misdemeanor 4 violation in the State of Ohio (S. Maynard, personal communication, Jan 5, 2018). Lt. Maynard advised that a way in which the opioid overdose problem is being addressed from a legal standpoint is through Ohio House Bill 110 (S. Maynard, personal communication, Jan 5, 2018). Ohio House Bill 110 creates "Good Samaritan" law to incentivize calling 9-1-1 for drug overdoses (S. Maynard, personal communication, Jan 5, 2018). But the Fairfield Police Department still charges these overdose victims with disorderly conduct. Lt. Maynard stated, "by charging them with a misdemeanor for drug possession, that person will actually go before a judge and the judge will order treatment for the victim or take action to correct the behavior" (S. Maynard, personal communication, Jan 5, 2018). He also stated, "it

makes them (drug abuser) accept responsibility for their actions and that there is repercussions” (S. Maynard, personal communication, Jan 5, 2018). Lt. Maynard stated, “The City of Middletown is doing the same thing (legally)” (S. Maynard, personal communication, Jan 5, 2018).

**Question 3: Has the opioid drug problem had an economic effect on your department?**

In order to understand the economic effect that the opioid epidemic has had on the Fairfield Fire Department, one important factor to take into consideration is the revenues that are not recovered through EMS billing of services provided to patients who have overdosed on opioids. The majority of opioid overdose patients do not end up paying for the EMS services provided to them by the Fairfield Fire Department (C. Bellman, personal communication, Jan 5, 2018). The reasons for this are that these patients frequently do not have health insurance or financial means to pay for these services and that most of these patients are transients in the city and do not have a registered address (C. Bellman, personal communication, Jan 5, 2018). Per Bellman, EMS runs are being billed out at a monetary rate of \$850 for an ALS level 1 call, and \$1150-\$1400 for an ALS level 2 call (C. Bellman, personal communication, Jan 5, 2018). EMS Billing revenue from the patient’s private health insurance reimburses the most money back to the fire department for cost of services provided (C. Bellman, personal communication, Jan 5, 2018). Medicare reimbursement for EMS services provided is \$850 while the reimbursement from Medicaid is only \$170 (C. Bellman, personal communication, Jan 5, 2018). The problem with receiving reimbursement for these type of EMS runs, is that most of these patients do not have private health insurance or Medicare (due to age of patient), and that most of these patients are transients and do not reside at a permanent resident to be billed (C. Bellman, personal

communication, Jan 5, 2018). Even if these patients were to be billed for services, they financially are unable to pay for the EMS services provided to them (C. Bellman, personal communication, Jan 5, 2018). Thus, the fire department is not receiving most billing revenue for these type of EMS calls. Between March 1, 2017 and November 25, 2017, the Fairfield Fire Department administered 161 doses of Narcan to opioid overdose patients (C. Cooper, personal communication, Jan 3, 2018). This medication usage plus the cost of services, when they are not being reimbursed by insurance or paid for by the patient, places the service provider in a financial burden. Looking at operating costs, the cost to the fire department to make a single EMS run for this type of medical emergency is approximately \$430 (this is an estimated figure, including an average cost for EMS supplies for these specific calls) (C. Cooper, personal communication, Jan 3, 2018; D. Bennett, personal communication, Jan 8, 2018). This includes the cost of responding personnel with salary and benefits and vehicle costs (D. Bennett, personal communication, Jan. 8, 2018).

A second important economical factor is the price of the Narcan. The Fairfield Fire Department currently pays \$30.53 a dose for Narcan, which is a negotiated rate with Mercy Hospital of Fairfield (C. Cooper, personal communication, Jan 3, 2018). For the 2016 year, the fire department paramedics administered 220 doses of Narcan for the 2016 year (C. Cooper, personal communication, Jan 3, 2018). For the first three quarters of 2017, 217 doses have already been given for the year. Lt Cooper stated that he projects a total of 289 total doses of Narcan will be given for the year (C. Cooper, personal communication, Jan 3, 2018). The total cost of Narcan for the two-year period is \$15, 539.77. It's important to note that the fire departments medication allowance through the EMS budget is \$10,000 per year (C. Cooper, personal communication, Jan 3, 2018). Most of the medication budget is being used to purchase

Narcan. This cost is deferred by the free doses that the fire department is receiving through the Butler County Health Department (C. Cooper, personal communication, Jan 3, 2018). The fire department received 70 free doses in 2016 and 100 free doses in 2017 from the BCHD (C. Cooper, personal communication, Jan 3, 2018). This deferred the actual cost to the departments EMS budget. Lt Cooper stated that the allowance of Narcan from the BCHD significantly reduced the financial burden on the department (C. Cooper, personal communication, Jan 3, 2018).

**Question 4: Has the opioid epidemic affected your departments resource capabilities?**

Each of the interviewees consistently reported that the resource capabilities of both the fire and police departments were not affected by the increase in opioid related emergencies. Lt Maynard did state that with the increase in opioid related calls for service, this did take personnel away from being able to make other calls for service during that same timeframe (S. Maynard, personal communication, Jan 5, 2018).

**Question 5: Has the opioid drug problem caused your department to make changes to the way it manages its resources to meet the increased challenges and needs associated with these overdoses?**

Each of the interviewees consistently reported that operational management of both the fire and police departments were not affected by the increase in opioid related calls. Lt Maynard stated that the only difference in resource management has been the development of the Quick Response Team (S. Maynard, personal communication, Jan. 5, 2018). Lt Maynard also stated that this has not affected the police department as much as the fire department, because the

police department does not administer Narcan to opioid overdose patients in the field (S. Maynard, personal communication, Jan. 5, 2018).

**Question 6: Has your department coordinated efforts with another department or agency to reduce the opioid drug abuse problem?**

All interviewees discussed the coordinated efforts of the QRT with the agencies that they have partnered with. These coordinated resources are comprised of state, county, local, and private agencies which offer support and resources to drug abuse victims (J. Viers, personal communication, Jan. 4, 2018).

**Question 7: What resources, programs, or assistance do you offer opiate drug abusers or their family members?**

Each of the administrative personnel interviewed stated that they offered the coordinated resources of the QRT collaboration. These resources are comprised of behavioral, mental, and drug treatment facilities, and recovery housing networks (J. Viers, personal communication, Jan. 4, 2018).

**Question 8: How do you measure the success of your assistance program? Is your program successful in decreasing the opioid drug abuse problem?**

Lt Viers and Lt Maynard both stated that the success of the QRT program would be the result of saving one person's life who was addicted to opioids and then getting that person into a drug treatment facility for treatment (J. Viers, personal communication, Jan. 4, 2018; S. Maynard, personal communication, Jan. 5, 2018).

**Question 9: Has your department established long-term planning goals to address the future opioid epidemic?**

Each of the administrative personnel interviewed stated that their long-term planning consisted of continued implementation of the QRT and continued relationship with all the resources of the QRT. Lt Maynard stated that he would like to see more site visits being performed in the field, but that the QRT is a new program that has just started for the city (S. Maynard, personal communication, Jan. 5, 2018). The QRT has just performed its initial visits starting in December of 2017 in which it made 11 site visits in 3 days, meeting with 2 patients. (T. Wagner, personal communication, Jan 3, 2018). See Appendix C for list of interview questions.

### **Survey**

#### **Question 1: Has the opioid epidemic affected your department's resource capabilities?**

Answer Choices	Response %	Number of Responses
Definitely yes	23.53	4
Yes	47.06	8
Uncertain/undecided	0.00	0
No	29.41	5
Definitely not	0.00	0
No answer	0.00	0

Total respondents: 17

**Question 2: Has your department made economic changes to adapt to and support the increase in opioid overdoses?**

Answer Choices	Response %	Number of Responses
Definitely yes	17.65	3
Yes	35.29	6
Uncertain/undecided	11.76	2
No	35.29	6
Definitely not	0.00	0
No answer	0.00	0
Total respondents: 17		

**Question 3: Has the opioid drug problem caused your department to make changes to the way it manages its resources to meet the increased challenges and needs associated with opioid overdoses?**

Answer Choices	Response %	Number of Responses
Definitely yes	17.65	3
Yes	41.18	7
Uncertain/undecided	0.00	0
No	41.18	7
Definitely not	0.00	0
No answer	0.00	0
Total respondents: 17		

**Question 4: Does your department track or manage data related to opioid overdoses?**

Answer Choices	Response %	Number of Responses
Definitely yes	29.41	5
Yes	58.82	10
Uncertain/undecided	5.88	1
No	5.88	1
Definitely not	0.00	0
No answer	0.00	0
Total respondents: 17		

**Question 5: Approximately what percentage of your EMS operational budget is used to treat opioid drug overdoses?**

Answer Choices	Response %	Number of Responses
10% or less	52.94	9
11-20%	17.65	3
21-30%	0.00	0
31-40%	5.88	1
40% or more	0.00	0
Uncertain/undecided	17.65	3
No answer	5.88	1
Total respondents: 17		



**Question 6: Has your department coordinated efforts with other departments/agencies as part of a collaborative approach to reduce the occurrences of opioid overdoses?**

Answer Choices	Response %	Number of Responses
Definitely yes	35.29	6
Yes	58.82	10
Uncertain/undecided	0.00	0
No	5.88	1
Definitely not	0.00	0
No answer	0.00	0
Total respondents: 17		

**Question 7: How do you foresee the number of opioid related overdoses that your department responds to in the near future?**

Answer Choices	Response %	Number of Responses
Increasing rapidly	0.00	0
Increasing steadily	23.53	4
Remaining the same	64.71	11
Decreasing steadily	11.76	2
Decreasing rapidly	0.00	0
Uncertain/undecided	0.00	0
No answer	0.00	0
Total respondents: 17		

**Question 8: Does your department offer specific resources, programs, or assistance to opioid drug users who become addicted to opioids?**

Answer Choices	Response %	Number of Responses
Definitely yes	35.29	6
Yes	47.06	8
Uncertain/undecided	0.00	0
No	17.65	3
Definitely not	0.00	0
No answer	0.00	0
Total respondents: 17		

**Question 9: Has your department established long-term planning goals to address the occurrence of opioid overdoses in the future?**

Answer Choices	Response %	Number of Responses
Definitely yes	17.65	3
Somewhat yes	29.41	5
Uncertain/undecided	29.41	5
Somewhat no	5.88	1
Definitely not	17.65	3
No answer	0.00	0
Total respondents: 17		

See appendix D for list of survey questions.

## DISCUSSION

In generalized comparison of the data obtained from both the interviews and survey, it was found that there were many similarities between my information and the information of other researchers. When the research was started, the original expectations were that the opioid drug problem was the same for the City of Fairfield as it was for the State of Ohio and that of the nation. In looking at statistical data from the City of Fairfield Fire Department, it has been determined that the City of Fairfield does have occurrences of opioid drug overdoses, but that these are considerably lower per capita than that of Hamilton County, the State of Ohio, and the nation. Thus, the strain on resources capabilities due to the number of opioid overdoses has been minimal for the Fairfield Fire and Police Department's. The strain of these overdoses on department resources was felt by 70.6% of the respondents (12 of 17) surveyed.

With regard to the tracking of EMS data related to opioid overdoses, (Garza & Dyer, 2016) discuss how EMS data can be utilized to help stop the opioid epidemic. The City of Fairfield Fire Department has within the last year begun to track specific statistical data as a way of understanding exactly how the opioid epidemic is affecting the City of Fairfield. With regard to the surveys returned, 88.2% of the respondents (15 of 17), stated that their department tracked data specific to opioid overdoses. National organizations such as Centers for Disease Control, National Institute on Drug Abuse, and National Institute of Health also track statistical data on opioid overdoses and maintain a wealth of information at the national level.

Outside of death caused by opioid abuse, the economic effect of the opioid abuse and addiction has been the hardest hit area involving the opioid epidemic. This economic effect is being felt at all levels of government. The misuse of and addiction to opioids—including prescription pain relievers, heroin, and synthetic opioids such as fentanyl—has been a serious

national crisis that has affected public health as well as social and economic welfare (National Institute of Health, Jun 2017). In 2013, prescription opioid overdose, abuse, and dependence carried with it an estimated total economic burden of over \$78.5 billion (Florence, 2016). In 2013, the total spending for health care and substance abuse was over \$28 billion, in which \$26 billion was covered by health insurance (Florence, 2016). In non-fatal cases, costs for lost productivity, including that of incarcerated individuals were estimated at \$20 billion (Florence, 2016). There were also \$7.7 billion in criminal justice –related costs (Florence, 2016).

The City of Fairfield Fire Department has not felt an excessive economic impact from the costs associated with Narcan due to the free supply of antidote that it is receiving from the Butler County Health Department. Where the Fairfield Fire Department is feeling the brunt of the economic impact associated with opioid overdoses if from lost EMS billing revenues. With regard to other area departments of Southwestern Ohio, 53% of the survey respondents (9 of 17) stated that their departments had made economic changes to adapt to and support the increase in opioid overdoses. Of the surveyed respondents, 12 of 17 (70.6%) stated that up to 20% of their EMS budget is used to treat opioid overdoses.

With regard to the resources of the Fairfield Fire and Police Departments, the opioid drug problem has not affected or caused an issue with the management of either departments' resources. Both the fire and police departments expressed similar concerns about the chronic drug problem and the repeat offenders negatively impacting the departments' personnel to respond to other emergencies or calls for service within the city during that same time. When looking at other nearby fire departments that were surveyed, 71% (12 of 17) of the respondents stated that the opioid epidemic has affected their departments resource capabilities. Of the respondents surveyed, 10 of 17 (59%) stated that the opioid drug problem caused their

department to make changes to the way it manages its resources to meet the increased challenges and needs associated with these overdoses.

There is an urgent need for a multifaceted, collaborative public health approach to the opioid epidemic (Rudd, Seth, David, & Scholl, 2016). Opioid overdose is a complex and widespread problem that won't be fixed with naloxone, law enforcement or data alone (Garza & Dyer, 2016). It will take a multifaceted approach from the entire healthcare community to bring about real change (Garza & Dyer, 2016). Long term planning for the Fairfield Fire and Police Departments was centered around a newly established Quick Response Team (QRT) to create a collaborate approach to mitigate opioid overdoses in the City of Fairfield. The QRT is a team of personnel from both the fire and police departments and a drug addiction outreach coordinator that go into the field on site visits to meet with citizens who have recently overdosed on opioids an offer them resources that are available to help them overcome their addiction. When asked of other departments in the area, 82.4% (14 of 17) of respondents stated that they offer specific resources, programs, or assistance to opioid drug users who become addicted. Of the departments surveyed, 47% stated that they have established long-term planning goals to address the opioid overdose problem in the future, 88% of which believe this epidemic is going to stay exactly how it is now or increase steadily.

The implications that the opioid drug epidemic has for the City of Fairfield, its fire department and police department are primarily financial and resource management. This drug epidemic problem is concerning because it has shown no signs of significantly slowing down (National Institute of Health, 2016). Opioid overdose is a complex and widespread problem that won't be fixed with naloxone, law enforcement or data alone (Garza & Dyer, 2016). It will take a multifaceted approach from the entire healthcare community to bring about real change (Garza

& Dyer, 2016). The overall goal of this collaborated approach (Rudd, Seth, David, & Scholl, 2016) is to reduce the occurrences of opioid overdoses occurring within the community. This reduction in the number of occurrences will in turn reduce the financial burden of operational costs to the City of Fairfield's Police and Fire Departments. Having fewer opioid overdose emergencies to manage will benefit the emergency recourse capabilities for the City of Fairfield's Police and Fire Departments as both departments would be available to respond to other emergencies and calls for service.

### **RECOMMENDATIONS**

- 1) Have a patient care reporting system that can track opioid related data. Keep up to date on this statistical data and review regularly so that progress/success of reduction programs can be tracked.
- 2) Have a standard format for entering information for opioid related emergencies. When attempting to extract data from the patient care reporting program, a standard way of reporting opioid runs will provide you the most consistent data.
- 3) Track through EMS billing revenues that are being lost to non-payment of services.
- 4) Check on availability and apply for state and federal grants to be able to offset departmental costs associated with chronic opioid overdoses.
- 5) Establish a collaborative with other local, county, and state resources to be able to offer people in the community who are addicted to opioids the necessary and available resources to be able mitigate their addiction to opioids.
- 6) Establish a QRT with a department as part of a collaborative approach to this issue. Also measure the success of the QRT.

To future researchers of this topic: The recommendations would be to conduct research on the new federal and state mandates that have been signed into law placing restrictions on the amount of opioid pain medication that a person has access to through a pharmacy prescription. What effects are the new efforts having on slowing down the opioid epidemic or are these efforts making the epidemic worse? Another research recommendation would be to investigate short term periods of decline in the number of opioid overdoses and figure out what the inherit cause or causes affected that change.

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## APPENDIX- A

**2017 Narcan Consumption Report**

## Narcan Use:

Q1-16	47 doses
Q2-16	38 doses
Q3-16	91 doses
Q4-16	44 doses

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16 Total	220 doses
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Cost per dose	\$30.53
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<b>Total cost</b>	<b>\$6716.60</b>
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Q1-17	66 doses	Increase of 30% from same period	
Q2-17	95 doses	Increase of 150% from same period	64 suspected opiate incidents
Q3-17	56 doses	Decrease of 38% from same period	45 suspected opiate incidents
Q4-17			

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17 Projected	289 doses	If the current pace continues
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Cost per dose	\$30.53
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<b>17 Total</b>	<b>\$8823.17 (Projected)</b>
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**Additional Data**

Q1-17 66 doses administered on 35 incidents. Unknown suspected incidents due to not collecting data.

Q2-17 95 doses administered on 45 incidents. 64 suspected opiate incidents according to custom field.

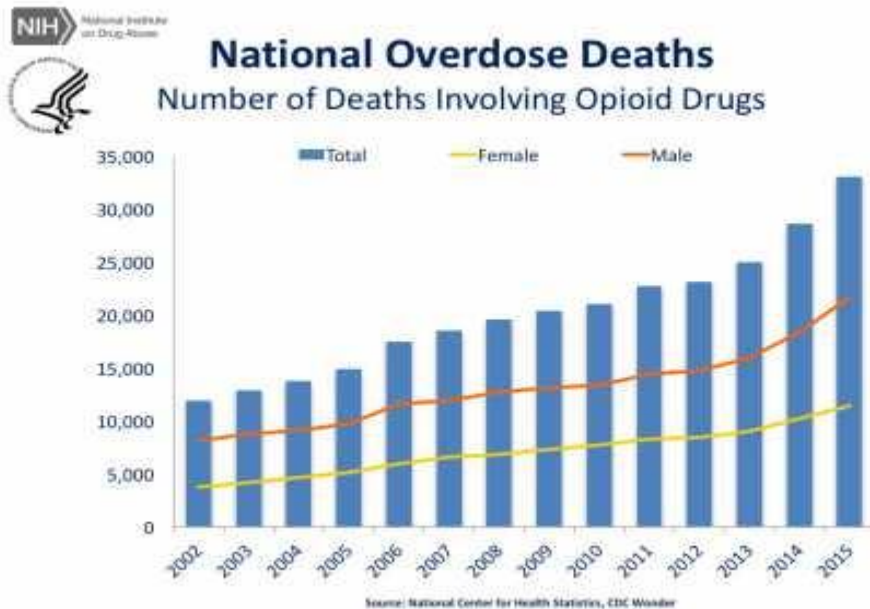
Received 100 doses of Narcan from Butler County Health Department early Q3, savings of \$3053.00

## APPENDIX-B

### List of figures and tables

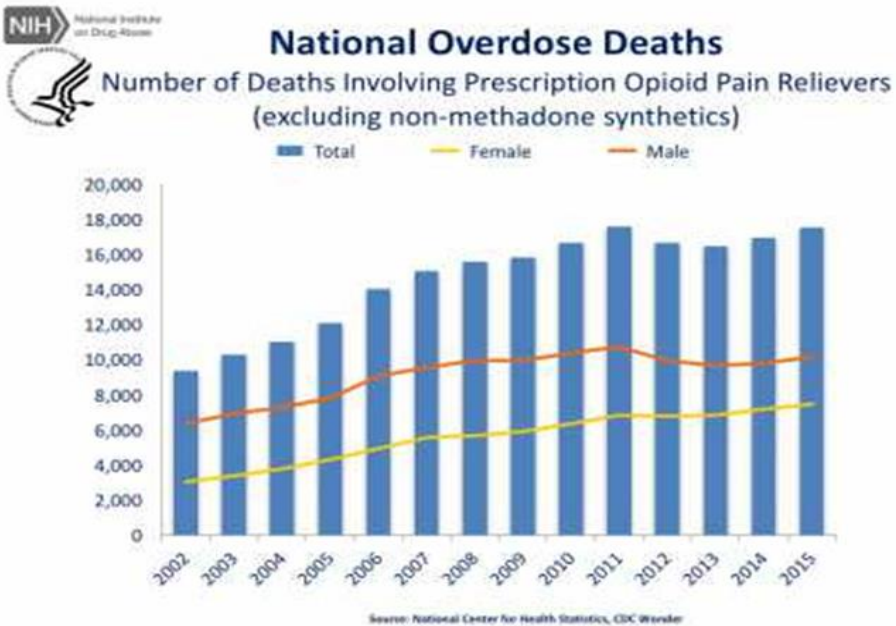
#### Figures

Figure 1



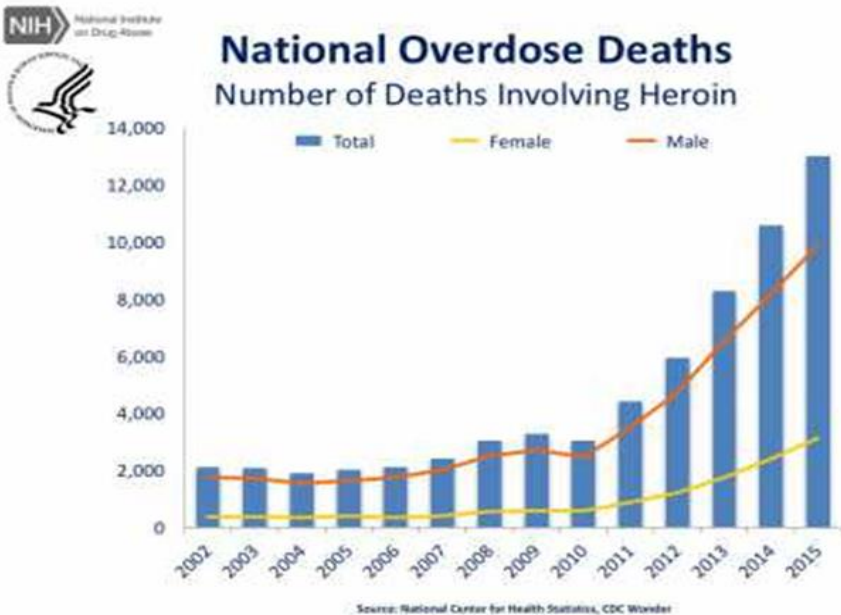
Source: National Center for Health Statistics, CDC Wonder

Figure 2



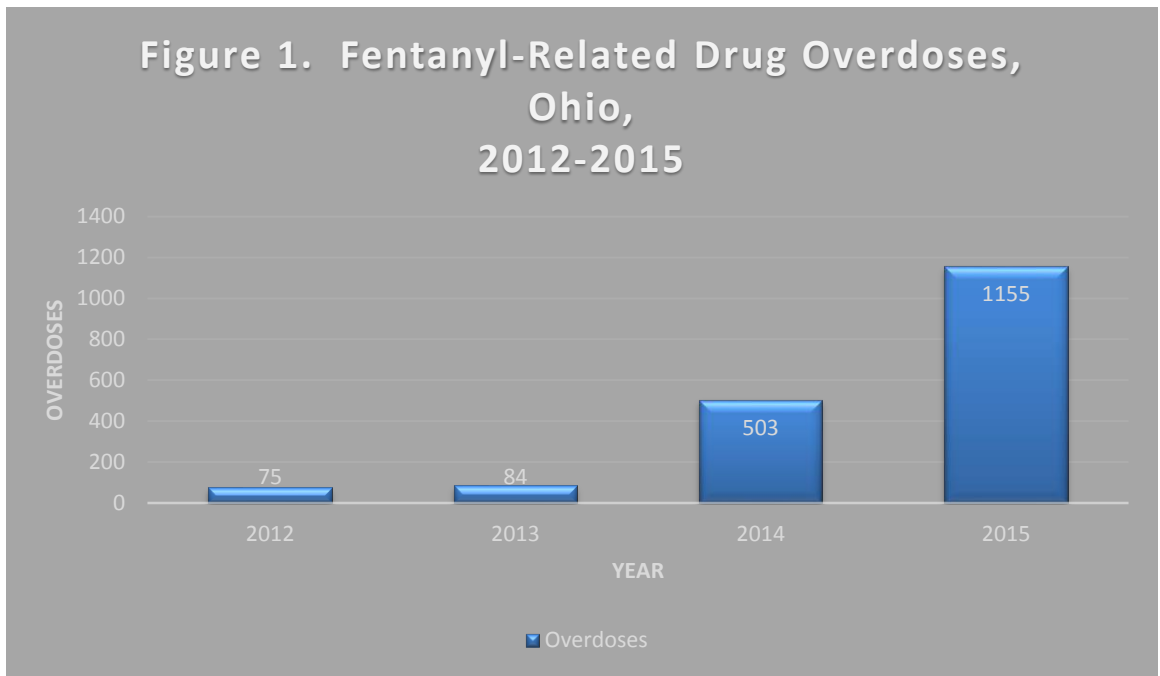
Source: National Center for Health Statistics, CDC Wonder

Figure 3



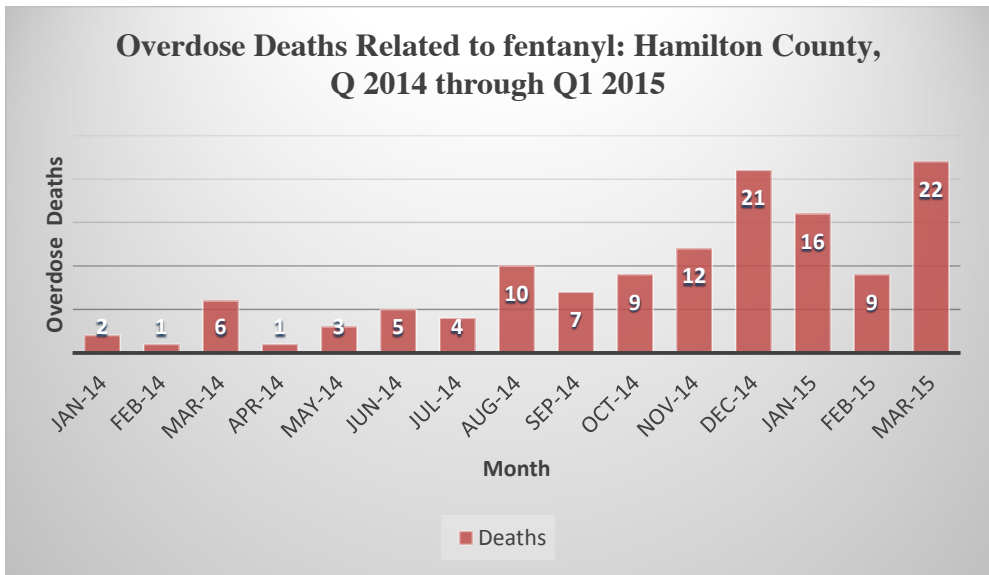
Source: National Center for Health Statistics, CDC Wonder

Figure 4



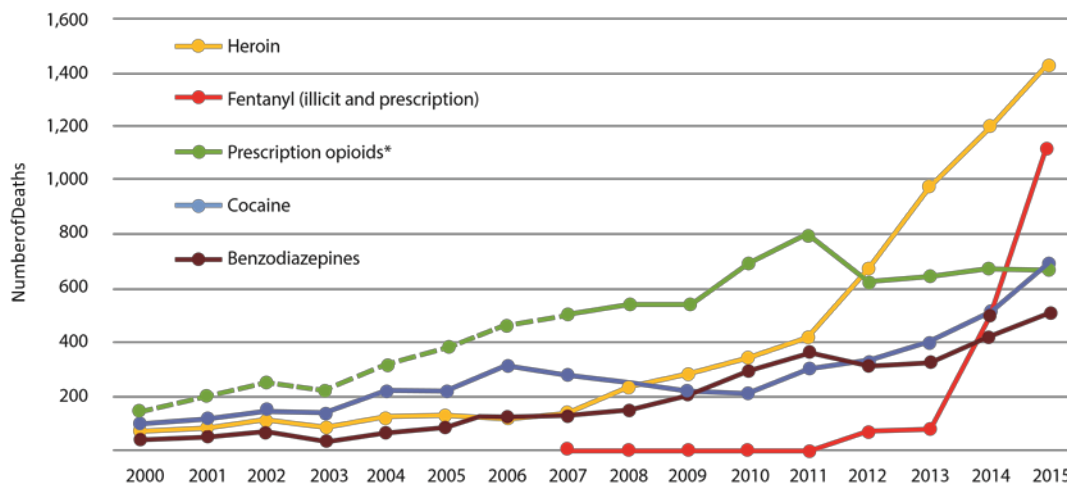
Source: Ohio Department of Health, Bureau of Vital Statistics; Analysis Conducted by ODH Injury Prevention Program

**Figure 5**



Source: National Institute on Drug Abuse (NIDA)

**Figure 6. Number of Unintentional Overdose Involving Selected Drugs by Year, Ohio, 2000-2015**



Source: Ohio Department of Health, Bureau of Vital Statistics; Analysis Conducted by ODH Injury Prevention Program.

**Table 1. Unintentional Drug Overdose Deaths of Ohio Residents Involving Specific Drug(s), as Mentioned on Death Certificate, by Year, 2007-2015**

<b>Drug Category</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>% of 2015 deaths</b>
<b>All Opioids*</b>	631	733	783	980	1,163	1,272	1,539	2,020	2,590	<b>84.9%</b>
<b>Heroin</b>	146	233	283	338	431	680	983	1,196	1,424	<b>46.7%</b>
<b>Fentanyl</b>	4	6	7	5	0	75	84	503	1,155	<b>37.9%</b>
<b>Prescription opioids**</b>	504	538	543	692	795	628	644	672	677	<b>21.9%</b>

**Source: Ohio Department of Health, Bureau of Vital Statistics; Analysis by ODH Injury Prevention Program.** 1. Total includes out of state deaths of Ohio residents for all years. 2. Individual drugs do not add up to totals as more than one drug may be listed on the death certificate for one death. 3. Data completeness varies from year to year for residents who died out of state; approximately 2 percent of the fatal overdoses on average each year. 4. 343 deaths in 2010 involved an unknown number of drugs. 5. 376 deaths in 2011 involved an unknown number of drugs; multiple drug involvement count is based on 1,396 deaths with known number of drugs included on death certificate. 6. 389 deaths in 2012 involved an unknown number of drugs; multiple drug involvement count is based on 1,525 deaths with known number of drugs included on death certificate. 7. 319 deaths in 2013 involved an unknown number of drugs; multiple drug involvement count is based on 1,791 deaths with known number of drugs included on death certificate. 8. 274 deaths in 2014 involved an unknown number of drugs; multiple drug involvement count is based on 2,257 deaths with known number of drugs included on death certificate. 9. 194 deaths in 2015 involved an unknown number of drugs; multiple drug involvement count is based on 2,856 deaths with known number of drugs included on death certificate. Includes prescription opioids, fentanyl and heroin; \*\* Prescription Opioids not including Fentanyl; Fentanyl was not captured in the data prior to 2007; \*\*\*Includes only those instances where no other drug than T50.9 (other/unspecified) is included as contributing to death



## APPENDIX C

### Interview Questions

Question 1: How has the opioid epidemic affected your department?

Question 2: What has your department done to address the increase in opioid drug abuse and overdoses?

Question 3: Has the opioid drug problem had an economic effect on your department?

Question 4: Has the opioid epidemic affected your departments resource capabilities

Question 5: Has the opioid drug problem caused your department to make changes to the way it manages its resources to meet the increased challenges and needs associated with these overdoses?

Question 6: Has your department coordinated efforts with another department or agency to reduce the opioid drug abuse problem?

Question 7: What resources, programs, or assistance do you offer opiate drug abusers or their family members?

Question 8: How do you measure the success of your assistance program? Is your program successful in decreasing the opioid drug abuse problem?

Question 9: Has your department established long-term planning goals to address the future opioid epidemic?

## APPENDIX D

### Survey Questions

Question 1: Has the opioid epidemic affected your department's resource capabilities?

Question 2: Has your department made economic changes to adapt to and support the increase in opioid overdoses

Question 3: Has the opioid drug problem caused your department to make changes to the way it manages its resources to meet the increased challenges and needs associated with opioid overdoses?

Question 4: Does your department track or manage data related to opioid overdoses?

Question 5: Approximately what percentage of your EMS operational budget is used to treat opioid drug overdoses?

Question 6: Has your department coordinated efforts with other departments/agencies as part of a collaborative approach to reduce the occurrences of opioid overdoses?

Question 7: How do you foresee the number of opioid related overdoses that your department responds to in the near future?

Question 8: Does your department offer specific resources, programs, or assistance to opioid drug users who become addicted to opioids?

Question 9: Has your department established long-term planning goals to address the occurrence of opioid overdoses in the future?

