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2019/2020

**“ADAPT AND OVERCOME”: THE
RELATIONSHIP BETWEEN EMERGENCY
DEPARTMENTS AND THE OPIOID EPIDEMIC**

SUBMITTED TO THE FACULTY OF VASSAR COLLEGE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF BACHELOR OF THE ARTS IN SCIENCE, TECHNOLOGY, AND SOCIETY

VICTORIA A. CLARKE

SENIOR THESIS

ADVISORS: BOB MCAULAY AND ELIZABETH BRADLEY



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Introduction

Background

For much of my undergraduate career, I have had an interest in the opioid epidemic. This was the first public health epidemic that I vividly remember hearing about through various media outlets, through public health initiatives in my community, and through class discussions in high school. Because of this, I find myself spending much of my time reading up on the latest developments of this public health crisis, talking about it with friends, and trying to find ways to get involved with combating it.

Equally important, my interests in emergency medicine stem from my training as an Emergency Medical Technician in New York. Having been certified for three years this May, much of my personal life is consumed by stories from my colleagues, hearing dispatches of emergencies throughout Dutchess County, and first-hand responding to these situations. The ever-changing environment of emergency departments is something I have always been fascinated by, and ultimately, I would love to spend my career working in the management of one.

These two interest areas formulated my thesis: how can two fields that I am so interested in have anything to do with each other? In the beginning, I thought one would only have impact on the other, because it made sense to me that the burden of an epidemic would have more of an impact on the medical field than medicine would have on a public health epidemic. Upon further research and discussions, I realized that I was really investigating a multi-faceted relationship between two relatively new and growing areas in their respective

fields. With that, I am excited to share with you the culmination of a year of research, showcasing how in order for complex public health and medical systems to be fully understood, the two fields must work together to combat emerging issues in their fields.

To put the above statement into context, I argue that the opioid epidemic poses challenges but also opportunities for emergency departments to assess and improve their performance under duress for the betterment of future generations and ailments to come. In the subsequent chapters, I will delve into the history of emergency medicine as a specialty to put its recent emergence into context. Subsequently, I will discuss the opioid epidemic, its origin, and various causes that have contributed to its relevance and significance in public health. Then, I will examine data from emergency departments throughout the United States to track performance. After, I will describe opioid overdose cases from emergency departments throughout the country and strategies they have implemented to combat the epidemic. I will then discuss the relevance of social determinants of health. Last, I will conclude by tying in my thesis argument with the COVID-19 pandemic.

Definitions

Throughout this thesis, the term “opioid” will refer to prescription pain medications, heroin, and illicitly manufactured fentanyl, as defined by the Centers for Disease Control and Prevention. Performance will be defined as factors including wait times for overdose patients and wait times for all other patients. The abuse of opioids is defined as opioid use “without a prescription, in a way other than as prescribed, or for the experience or feelings elicited,” as explained by the National Institute on Drug Abuse (Mathis et al. 2018). Addiction, used separately from the abuse of opioids, is defined by the National Institute on Drug Abuse as “A

chronic, relapsing disease characterized by compulsive drug seeking and use, despite serious adverse consequences, and by long-lasting changes in the brain” (“Prescription Drug Abuse”, 2011).

Chapter 1 – History of Emergency Medicine

1.1 – Overview of Emergency Departments (EDs)

Emergency departments are now a common feature of many hospitals across the United States, but it has not always been this way. Before the introduction of emergency departments, one would need to visit any available physician to treat their medical problem, regardless of the patient's presenting case. In 1961, four physicians left their private practices to staff an emergency department in Alexandria, Virginia; this effort was led by James D. Mills, M.D. Similarly, 23 physicians in Pontiac, Michigan left their practices to do the same. This was the first moment where physicians independently realized a need for specialists in emergencies who were able to be around at any hour of the day (Suter, 2012).

Prior to the formation of the emergency medicine specialty, those who needed emergency care would be seen by whatever physicians were available, regardless of their specialty. Even if a hospital were a large university-based teaching hospital, it is possible that an appropriate physician would not be available without dedicated emergency specialists around. Second, the same group of symptoms can be diagnosed as many different diseases. If a patient arrived at a hospital presenting with abdominal pain and vomiting, this could be due to dehydration, alcohol poisoning, or even appendicitis. Without the appropriate emergency medicine physician or practitioner who is trained to diagnose and stabilize patients across a large array of ailments, the patient might need to be seen by a cardiologist, a neurologist, an endocrinologist, and a gastroenterologist, among other specialties before attaining a proper diagnosis out of multiple differential diagnoses (Suter, 2012). The formation of an emergency

medicine specialty greatly improved both the timeliness and appropriateness in which these patients were seen by a physician and stabilized, making for a safer and more effective system for emergent medical cases.

In August of 1968, the American College of Emergency Physicians was founded, initially to develop education materials specific to emergency medicine. Soon after, in 1972, the American Medical Association recognized emergency medicine as a specialty and created the American Medical Association Section of Interest on emergency medicine. The next year, the federal government passed the Emergency Medical Services Systems Act (Public Law 93-154) to fund local and regional EMS services (Suter, 2012). Additionally, funds from the Department of Health, Education, and Welfare (1972), the Robert Wood Johnson Foundation (1973) helped jumpstart emergency medicine as a specialty (Kellermann et al., 2013). On the private side, Advanced Cardiac Life Support and Advanced Trauma Life Support courses were created for continuing EMS education. The first emergency medical residency program was started in 1970 at the University of Cincinnati, sparking the creation of more emergency medical education programs for medical residents (Suter, 2012). Ultimately, the success of the initial work on developing the emergency medicine specialty led to the creation of The American Board of Emergency Medicine in 1976. This board then received its specialty board approval in 1979 to make emergency medicine the 23rd medical specialty in the U.S. (Suter, 2012).

With the arrival of emergency medicine in the hospital also came the introduction of the 911 system. In 1957, the National Association of Fire Chiefs recommended the use of a single number for reporting fires, rather than calling the local firehouse. This was supported by other Federal Government Agencies and government officials, leading to the President's Commission

on Civil Disorders working with the Federal Communications Commission (FCC) for a permanent solution. In November of 1967, the FCC met with the American Telephone and Telegraph Company (AT&T) to create a solution, and in 1968, it was announced that 9-1-1 would be the emergency code throughout the U.S. This number was chosen because it is brief, easily remembered, and can be dialed quickly. It also is a unique number, never having been authorized as an office code, area code, or service code, and it met long-range numbering plans and switching configurations of the telephone industry ("History of 911", 2017). It is strongly encouraged for 911 to be called for those who are experiencing medical emergencies, particularly an overdose, as important life-saving measures can be taken to ensure the patient's life is saved.

Presidents John F. Kennedy and Lyndon B. Johnson's interest in public health, specifically in treating heart disease, cancer, trauma, and stroke is much of the reason why emergency medical services came to be. Much of the strategies to combat these included establishing regional associations centered around academic medical centers to improve research, education, and patient care, with government involvement to make sure the advances were properly disseminated. As a result, Regional Medical Programs (RMP) were created. These programs expanded the training of health care providers, promoted a philosophy of technologically advanced and intensive health care, and moved control of health care improvements from the local to the regional level, with the regional associations forming independently based upon community needs. Funding for these programs created numerous EMS systems and trained many Emergency Medical Technicians. Additionally, regionalized health care became of focus, meaning that these EMS providers would take trauma patients to

specialty centers, rather than a local regional hospital. Initially, there was a lack of legislation, standards, and regulations for EMS providers, creating a disorganized system of variable patient care, but in the 1960s, improved technologies, funding, and protocols strengthened EMS, proving it to be a vital and important contribution to emergency medicine (Shah, 2006).

1.2 – Theoretical Framework to Explain Emergency Departments

In thinking of STS theory that accurately reflects the founding of emergency medicine as a specialty, Bruno Latour's actor-network theory comes to mind. Latour instructs us to "follow the actors" as they assemble social networks with successful results. This is best explained by the use of actor-network theory to explain the success of the Portuguese Caravel in sailing around Africa when previous ships failed to do so. If we view this ship as only a ship, we miss seeing how the network of relationships contribute to its success, including the design and physical structure of the ship and the trained captains who employ technology to successfully sail. The specialized language of actor-network theory speaks of "assembling the social," of "heterogeneous engineering" (a kind of multi-tasking), of "enrollment" and "recruitment" of "allies." Networks that survive must successfully face "trials of strength."

In a similar vein, emergency departments are not only identifiable departments within a hospital, but a network of relationships that contribute to its success. There are not only physicians, but there are nurses, patient care technicians, respiratory technicians, physician's assistants, the physical structure of an emergency department, the inclusion of in-house x-ray laboratories, and more, that have turned the basic emergency room into what it has become today. Nevertheless, emergency departments are ever-evolving environments that must continue to adapt and evolve to situations that arise.

Take, for instance, the yearly influenza outbreak. From personal experience, I have witnessed Vassar Brothers Medical Center shape its emergency department three separate times in one flu season to adapt to the evolving nature of the virus. First, all flu patients were seen as normal, meaning brought into the regular home of the emergency department to get the care they need. I then witnessed the emergency department separate flu patients into another area of the hospital, one that was normally used as a conference space. Once the spread of the flu decreased, patients were seen as normal in the regular home of the emergency department. Opioid patients can be seen in a similar way, such as breaking them off into a separate, dedicated ward of the emergency department for substance abuse treatment. Chapter 4 describes practices taken by emergency departments that have done this.

This is all to say that emergency departments can be thought of as adaptive ecosystems; they are evolving entities that must adjust in the face of environmental challenges. What must an emergency department do if suddenly the opioid supply explodes, if either drug demand or drug supply goes through the roof, or what if a new virus suddenly appears on the scene? The following chapter will focus in on the background of the opioid epidemic to provide further context of why emergency departments must adapt to new challenges.

Chapter 2 – The Opioid Epidemic

Opioids are medications used to relieve pain. They reduce the intensity of pain signals reaching the brain and affect those brain areas controlling emotion, which diminishes the effects of a painful stimulus (“Prescription Drug Abuse”, 2011). Drugs that fall into these categories include hydrocodone, oxycodone, morphine, codeine, fentanyl, heroin, and more. While many opioids are used for medical purposes (i.e. before or after surgeries to alleviate pain, relieve dental pain, and even as cough and severe diarrhea relievers), a rising problem in society is the non-medical usage of opioids. The following chapter will dive into selected issues and topics surrounding the opioid epidemic.

2.1 – Overview of the Opioid Epidemic

As of October 16, 2017, the opioid epidemic was recognized as a public health emergency (Jones et al., 2018). The Centers for Disease Control and Prevention began to use the term “epidemic” to describe this event in 2011, and little evidence has been provided to change the status to anything other (Freeman et al., 2018). Since 1999, prescription opioid overdose deaths have quadrupled (Ayres et al., 2018). In 2017, 47,600 deaths were caused by opioid overdoses (“Drug Overdose Deaths”), and 35% of these deaths were attributed to prescribed opioids (“Overdose Deaths Involving Prescription Opioids”); for comparison, in this same year, the number of deaths from motor vehicle accidents was 37,133 (“USDOT”). Currently, the states with the highest number of opioid overdose deaths are West Virginia (57.8 per 100,000), Ohio (46.3 per 100,000), Pennsylvania (44.3 per 100,000), Washington, D.C. (44.0 per 100,000), and Kentucky (37.2 per 100,000) (“Drug Overdose Deaths”).

After the introduction of pain standards from The Joint Commission, a report found that the incidence of opioid over-sedation more than doubled from 11.0 to 24.5 per 100,000 inpatient hospital days (Vila et al., 2005). The prescribing of opioids saw an increase between 1999 and 2011, which increases the deaths and overdoses associated with prescribing (Hallvik et al. 2018). This may be due to their use for pain, as they are intended for short-term pain relief. However, their addictive nature has caused between 8 and 12 percent of patients who are prescribed opioids to develop an opioid use disorder (Hallvik et al., 2018); in context, four in five new heroin users started out misusing prescription pain killers (Jones, 2013). Non-medical opioid usage is also a large contributor for the rise in opioid use. Non-medical use, however, is related to physicians prescribing opioids to patients. In 2017, there were 58.7 opioid prescriptions written for every 100 residents, by state and county (“Prescription Opioid Data”). Even more specific is the desire in the 1980s and 1990s to treat pain previously untreated. Epidemiologists suggest that the low perceptions of risk or harm from these medications are associated with the non-medical use of opioids (Mathis et al., 2018).

Although opioids technically require a prescription, a substantial amount of the use is non-prescription use; this includes the use of opioids by friends and families of those individuals with a prescription to attain opioids and use without a prescription. In a 2018 study, it was found that 53% of individuals who have prescription opioids are given them by family or friends (Mathis et al., 2018). Opioids have a high potential to cause addiction, even when prescribed and taken appropriately.

2.2 – Pain and Opioids

Pain is one of the first signs we recognize after an injury. Before the 1800s, though, physicians viewed pain as a “consequence of aging” (Jones et al., 2018). During this same time, there were no regulations on using cocaine and opioids, which resulted in widespread marketing and prescribing of these drugs for many different conditions. In response to growing abuse of heroin for non-medical purposes, the Harrison Narcotic Control Act of 1914 was passed; however, this act did not restrict physicians on prescribing opioids (Terry, 1915).

For much of the late 20th century, patients with pain were encouraged to wean themselves off of opioids until they had a life expectancy of weeks, creating a fear known as “opiophobia” (Jones et al., 2018). Studies into this fear discovered an under-reliance of opioid analgesics and an under-treatment of pain. Furthermore, in 1980, a letter to the editor of the *New England Journal of Medicine* by Jane Porter and Hershel Jick, M.D., stated that it was rare for patients to develop an addiction to opioids if they had no prior history of addiction (Porter and Jick, 1980), but there is little scientific evidence to support this (Jones et al., 2018).

Two large organizations then took a stand on pain as an important finding that should be addressed upon physician examination of a patient. First, the World Health Organization had their Cancer Pain Monograph, addressing the under-treatment of post-operative pain, as well as cancer pain, prompting publications questioning why opioids were not given to patients with chronic pain (Jones et al., 2018). Second, In the 1990s the Joint Commission on Accreditation of Hospitals recognized pain as the fifth vital sign in the United States, which resulted in doctors asking about pain (Baker “TJC Pain Standards”, 2017). While this effort was meant to improve patient experience, the literature believes it may have had the unintended effect of vastly

increasing use of pain medications, some of which may result from inappropriate prescriptions for opioids (Jones et al. 2018). The Joint Commission began publishing standards for pain management in 2000, emphasizing that physicians conduct their examinations using quantitative assessments of pain, as recommended by the Institute of Medicine (Baker “History of TJC Pain Standards,” 2017). This mandating of assessing pain led to physicians heavily relying on opioids due to a fear of federal healthcare funds being removed if their practice was not up to the standards of The Joint Commission (Jones et al., 2018). Pharmaceutical companies also pushed for the use of opioids as a treatment option, and as seen in the following paragraphs, the effect of this is still evident today.

2.3 – Pharmaceutical Involvement in the Opioid Epidemic

The history of how opioids were advertised may explain in part how the opioid epidemic came to be. The advertising of OxyContin, a drug manufactured by Purdue Pharma in Stamford, Connecticut, is one of the first instances of opioids being promoted for use for pain management. Around the same time that the Joint Commission began its “pain as the fifth vital sign” movement, Purdue sponsored pain-management and speaker-training conferences, targeted toward healthcare providers. Purdue used marketing data to influence what physicians prescribe. They targeted the physicians who had the highest rates of opioid prescription nationwide (Van Zee, 2009). A bonus system was also put in place to increase the sale of OxyContin among pharmaceutical representatives. These sales representatives were also involved in a starter coupon program for patients, providing patients with a free-limited time prescription for as little as 7 to as many as 30 days (Van Zee, 2009). During this period, the number of prescriptions for patients with pain not related to cancer saw a tenfold increase, and

prescriptions for patients with cancer-related pain increased by four times (Van Zee, 2009). The business approach taken by Purdue increased and influenced the number of prescriptions of OxyContin, therefore increasing the exposure of the drug to consumers.

To put this into context, in 2018, 46,802 deaths were caused by opioid overdoses, making up 69.5% of all drug overdose deaths. Though the number of new cases of opioid addiction happen annually throughout the United States is unreported, it is of note that roughly 21 to 29 percent of patients prescribed opioids for chronic pain misuse them (“Opioid Overdose Crisis”, 2020). Emergency department visits for opioid overdoses rose 30% in all parts of the United States between July 2016 and September 2017 (“Opioid Overdoses Treated in Emergency Departments”, 2018). With these high numbers, root causes of these deaths are being further examined, as illustrated by recent lawsuits involving pharmaceutical companies throughout the nation.

Today, the actions of pharmaceutical giants like Purdue Pharma are coming under public scrutiny. Over the last few years, over 2,500 local governments and numerous states filed lawsuits against some of the country’s largest names in pharmaceuticals, physicians, and more of the major players in the opioid crisis. Among these companies and individuals are the Sackler family, whom are known for founding Purdue Pharma. These lawsuits were lumped together, mainly in Summit and Cuyahoga Counties in Ohio, and were scheduled to have a lawsuit on October 21st, 2019. Prior to this lawsuit, Purdue Pharma filed for Chapter 11 bankruptcy protection as a part of a settlement deal one month prior and was mandated to pay \$3 billion of the Sackler family’s money to plaintiffs, thus excluding them from the trial. Just a few hours before it was scheduled to begin, pharmaceutical giants Teva Pharmaceuticals, McKesson,

Cardinal Health and AmerisourceBergen agreed to settlements with the two Ohio counties totaling roughly \$260 million. The only pharmaceutical giant that has yet to agree to a settlement is Walgreens, but because they were sued as both a distributor and a pharmacy, the company will likely be included into a lawsuit by the Ohio counties against pharmacies (Dwyer, 2019).

2.4 – Government Involvement in the Opioid Epidemic

In 2017, to try to address the opioid epidemic, President Trump awarded a total of \$485 million in grants to all states through the Department of Health and Human Services, to be distributed over two years. In a statement, Health and Human Services Secretary Tom Price, M.D., said:

“These grants aim to increase access to [substance abuse] treatment, reduce unmet need, and reduce overdose related deaths. I understand the urgency of this funding; however, I also want to ensure the resources and policies are properly aligned with and remain responsive to this evolving epidemic. Therefore, while I am releasing the funding for the first year immediately, my intention for the second year is to develop funding allocations and policies that are the most clinically sound, effective and efficient.”

These funds are aimed to combat five different context areas of the epidemic: strengthening public health surveillance, advancing pain management practice sans opioids, improving access to treatment and recovery services, targeting availability and distribution of overdose-reversing drugs, and supporting research. Ultimately, Dr. Price stated that “Through a sustained focus on people, patients, and partnerships, I am confident that together we can turn the tide on this public health crisis” (“Trump Administration awards grants to states to combat opioid crisis”, 2018). Since then, sub-branches of the Department of Health and Human Services have specified funds for particularly vulnerable populations, as well as for expanding treatment, Through the Substance Abuse and Mental Health Services Administration (SAMHSA), \$9.8

million was awarded in September 2017 to “support family-based services for pregnant and postpartum women with a primary diagnosis of a substance use disorder, including opioid use disorders” via the Comprehensive Addiction and Recovery Act. This act also distributed funds to increase the availability of long-term recovery support for substance abuse and addiction, provide training and medication for emergency treatment of opioid overdose, and expand access to FDA-approved drugs or devices for emergency treatment of opioid overdose (“Better Prevention, Treatment & Recovery Services”, 2018).

These funds have improved some nationwide statistics. From 2017 to 2018, there was a 4.1% decline in drug overdose deaths. This is the first time in over two decades in which fewer Americans died of drug overdoses than the year before. However, there are rising death rates of other substances, such as methamphetamines, and further work from the Department of Health and Human Services is to be done to lower numbers more (“HHS By the Numbers”, 2020).

2.5 – Prescription Drug Monitoring Programs and Opioids Prescribed in Emergency

Departments

Prescription drug monitoring programs (PDMPs) are electronic registries maintained within states of prescription drugs being dispensed (Winstanley et al., 2018) and their expansion is another way in which the medical profession and state/federal government are working to stem the opioid epidemic. According to the CDC, PDMPs are “among the most promising state-level interventions to improve opioid prescribing, inform clinical practice, and protect patients at risk” (“What States Need to Know About PDMPs”, 2017). All states but Missouri have legislation establishing these programs. Physicians can use PDMPs to detect

patterns of drug abuse, and also stop “doctor shopping” or prescription duplication as they maintain the records of controlled substance prescriptions issued to a patient (Ayres et al., 2018). These programs also reduce the fraudulent or overprescribing of opioids by physicians (Islam et al., 2014). The absence of these programs in the 1990, potentially in combination with Purdue Pharmaceutical’s promotion of OxyContin, may have been the cause of over-prescription. It is important to note that, once these programs are implemented, it takes time for them to be fully utilized. In addition, until the majority of providers are using PDMPs, population-level impact is unlikely (Winstanley et al., 2018).

These programs are important, especially considering the history of the rates of opioid prescribing patterns. Beginning in 2006, there was a steady increase in the overall national opioid prescribing rate, with the total number of prescriptions dispensed peaking in 2012 at more than 255 million and a prescribing rate of 81.3 prescriptions per 100 U.S. residents. After 2012, the prescribing rate had fallen through 2018, with 51.4 prescriptions per 100 U.S. residents, giving a total of more than 168 million total opioid prescriptions (“U.S. Opioid Prescribing Rate Maps”, 2020). Based on the introduction of PDMPs during this time frame, it is clear that they are helping limit the increase in unnecessary opioid prescriptions.

An important link between the opioid epidemic and emergency departments is the prescribing patterns of opioids by emergency department physicians and other prescribing providers. Opioids were given during emergency department visits at 53.4 visits per 1,000 adults visiting the emergency department during the study period, and opioids were further prescribed at discharge for at-home continuity of care at 38.4 visits per 1,000 adults visiting the emergency department during the study period (Rui and Schappert, 2019).

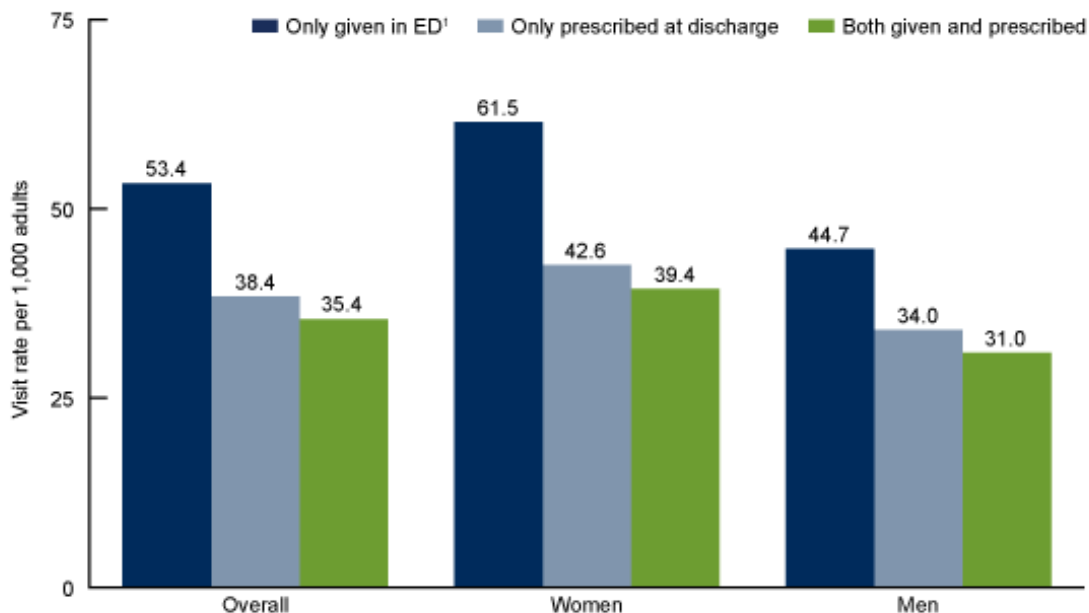


Figure 1 – Rate of emergency department visits with opioids given in emergency departments, prescribed at discharge, or both, per 1,000 adult women and men: United States, 2016
(Source: Rui and Schappert, 2019)

According to a 2020 report from the CDC, exposure to an opioid prescription in the ED has been identified as a potential risk factor for long-term use, with one study reporting that 17% of patients who filled their first opioid prescription for a minor painful condition were still receiving opioids one year later (Pinyao et al., 2020) (Stephenson, 2020). Could there be a more effective way of treating pain in emergency departments? To address this question, it is useful to consider the performance emergency departments and how this might be further affected by the opioid epidemic. The following chapter will examine emergency department performance, using a variety of measures.

Chapter 3 – Emergency Department Performance

Emergency departments are utilized by individuals throughout the United States. With roughly 43.3 visits per 100 United States residents in 2017, patients with many different diagnoses, treatments, and outcomes are seen in emergency departments. A major performance metrics for emergency departments nationally is wait times.

3.1 – Wait Times and General Emergency Department Data

Wait times in emergency departments are important measures of tracking hospital efficiency. In many cases, the emergency department is a patient's first entry into a hospital, so any delays to care in that time could affect their outcome. In general, shorter wait times lead to better clinical results and higher patient satisfaction (Hall et al., 2013; Horwitz et al., 2010). In a 2010 paper written by Dr. Leora Horwitz and colleagues, it was found that in 2006, the median wait time among acutely ill (emergent and urgent) patients was 27.5 minutes; the median emergency department was able to evaluate 78.3% patients within the recommended triage time of one hour (Horwitz et al., 2010). But what has changed since then?

The most current hospital emergency department data, which include information on wait times nationwide, are collected as part of the Centers for Disease Control's National Hospital Ambulatory Care Survey (NHAMCS). The NHAMCS collects data on the utilization and provision of ambulatory care services in hospital emergency and outpatient departments, as well as ambulatory surgery locations. The survey's findings are based on a national sample of visits to the emergency departments, outpatient departments, and ambulatory surgery

locations of noninstitutional general and short-stay hospitals (“Ambulatory Health Care Data”, 2020). Datasets from each year’s survey can be found publicly online through the CDC’s website and are released from the Ambulatory and Hospital Care Statistics Branch of the CDC.

The most recent study using NHAMCS was conducted from December 26, 2016, through December 24, 2017 (“NHAMCS”, 2017); 234 emergency departments throughout the country participated in the survey; 331 emergency service areas within emergency departments were identified, and 240 of these areas responded fully or adequately, defined as having completed patient record forms for at least one-half of their expected visits based on the total number of visits during the aforementioned time period. The study reported that about 138,977,000 total visits to emergency departments (“NHAMCS”, 2017). About 40% of patients, waited less than 15 minutes to see a physician, advanced practice registered nurse, or a physician assistant, and 32.9% of patients waited between 15 minutes and an hour. Limitations of these summary tables include that the numbers for wait times are not stratified by chief complaint (i.e., the main reason why the patient presented themselves to the emergency department), but nonetheless the data provide insight into trends in wait times and patients’ chief complaints. About 0.1% of all visits to the emergency room were for opioid-related disorders, 0.2% were for intentional overdoses, and another 0.2% were for unintentional overdoses. Though these numbers are small, it is of note that the largest percentage of chief complaints in this table is 5.7%, which is for “Other symptoms, signs, abnormal findings and ill-defined conditions,” and the next largest percentage is 5.0% for abdominal pain. This indicates that there is a wide variety of complaints patients come into the emergency department for, which leads to smaller percent distributions overall (“NHAMCS”, 2017).

In comparison, looking at the 2016 tables provide insight into potential trends in hospitals. The 2016 survey was conducted from December 28, 2015, through December 25, 2016; 265 emergency departments throughout the country participated in the survey; 385 emergency service areas within emergency departments were identified, and 271 of these areas responded fully or adequately, defined as having completed patient record forms for at least one-half of their expected visits based on the total number of visits during the aforementioned time period. A total of 39% of patients waited less than 15 minutes to see a physician, advanced practice registered nurse, or a physician assistant, and 31.6% of patients waited between 15 and 59 minutes to see one of the mentioned providers. It is of note that more than one third of patients spent between 2 and 4 hours in the emergency department, which is roughly 34% of all patients. Additionally, 0.2% of cases were for intentional overdoses, and 0.1% were for opioid-related disorders (“NHAMCS”, 2016).

In both years, the exact number of diagnoses of opioid-related disorders had an estimate that did not meet NCHS standards of reliability; thus, it was not reported in the summary tables. This implies that though there are cases of this occurring in the emergency department, there are not enough to have a precise count. However, percent distributions are provided, which helps in seeing these cases compared with other chief complaint presentations. Again, though these are small percents, the distribution of case presentations is extremely wide in emergency departments.

In comparison to the Horowitz analysis from 2010, the number of patients being seen in the recommended triage time has slightly decreased; the figures from the 2006 data report 78.5% of patients being evaluated in about an hour, whereas around 73% of patients in 2017

and 70.1% of patients in 2016 were seen in an hour. Though 2006 data are not viewable on the CDC website, it is of note that there are no data reported for opioid-use disorder emergency room visits on the published NHAMCS study from 2007, which may imply that there was not a need for this data in previous years. However, the more recent numbers support my thesis claim that opioids are challenging emergency department performance as measured by wait times.

In addition to the NHAMCS, the CDC maintains data briefs on their website through the National Center for Health Statistics (NCHS). These briefs provide key findings from various health-related studies and reports using data from the CDC. The briefs also provide context to the data collected by the CDC, making way for future implications on policy, healthcare delivery, and ways to improve standard of care. The following information was found using the search tool from the NCHS Data Briefs page, using the search term “emergency.”

In a 2012 brief from Esther Hing, M.P.H., and Farida Bhuiya, M.P.H., 2009 emergency department wait times were analyzed. Between 2003 and 2009, mean emergency department wait times increased from an average of 46.5 minutes to 58.1 minutes; longer wait times were seen in urban areas (62.4 minutes) as compared to non-urban areas (40.0 minutes). The increase in wait time was directly related to the annual emergency department visit volume, with the average wait time being 33.8 minutes in EDs with less than 20,000 annual visits and 69.8 minutes in EDs with 50,000 or more annual visits (Hing and Bhuiya, 2012). It was also reported that among those hospitals with triage systems (see Figure 2), 53% of patients were seen within the recommended triage time of one hour. In comparison to the 2010 study by Horwitz et al., we see that emergency departments are less efficient in getting patients seen

within the recommended triage time; 67% of patients in 2006 who were triaged to be seen in an hour or less were seen in that time (Horwitz et al., 2010).

An important factor to consider when looking at emergency department wait times is the urgency of the patient's case. Those entering the emergency department for an opioid overdose are considered immediate cases in the emergency department, meaning that because of a high potential for death, these patients must be immediately seen by a healthcare provider. Other triage levels include emergent (must be seen between 1 and 14 minutes), urgent (must be seen between 15 and 60 minutes), semiurgent (must be seen between one to two hours), and nonurgent (can be seen after two hours) (Gilboy et al., 2011). As seen in the 2012 CDC brief by Hing and Bhuiya, most emergency department visits in 2009 were for urgent patients, whose mean wait time was 63.3 minutes. Immediate patients made up 2% of all emergency department visits, with a mean wait time of 28.9 minutes. This high number of urgent patients may be due to patients seeking out emergency department care rather than primary care due to lack of a timely option elsewhere.

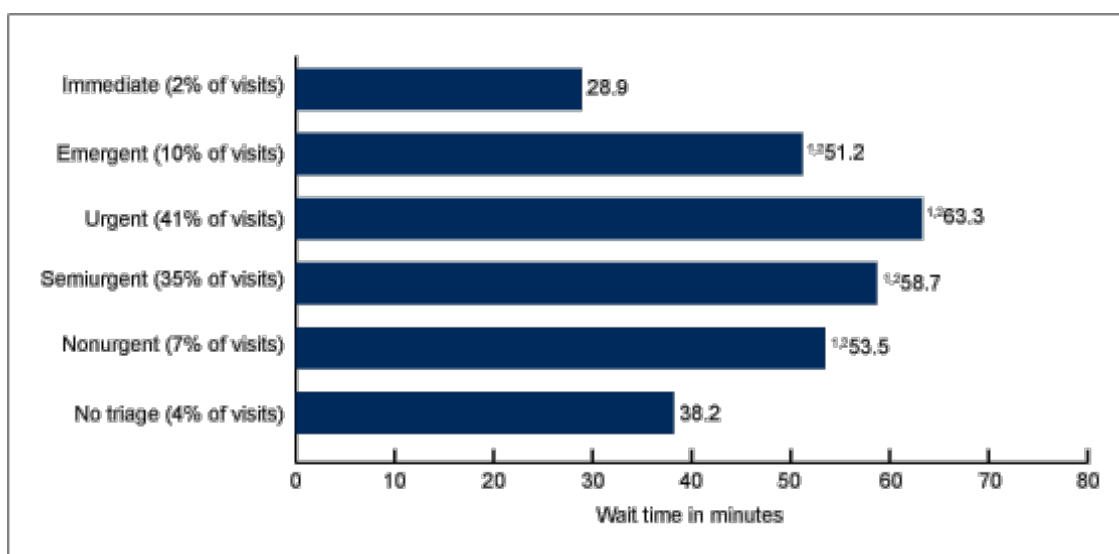


Figure 2 – Mean emergency department wait time for treatment, by urgency of patient care: United States, 2009
(Source: Hing and Bhuiya, 2012)

3.2 – Crowding

As defined by the American College of Emergency Physicians, emergency department crowding is defined as when there are inadequate resources to meet patient care demands that lead to a reduction in the quality of care (Asplin et al., 2003). Overcrowding presents a consistent problem in U.S. emergency departments in receiving care in a timely manner. It also presents a case for supply and demand issues in receiving treatment. The function of urgency for demand of non-emergent versus emergent care differs in that non-emergent, known conditions often see similar procedures on a routine basis, yet when emergent cases appear, this leads to an increase in unscheduled procedures. This is of importance, as those receiving care for non-emergent, chronic cases of illness have different organizational and supply characteristics than those needed for emergency medical care (Asplin et al., 2003).

The below model comes from a 2003 paper from Dr. Brent Asplin and colleagues titled, “A Conceptual Model of Emergency Department Crowding.” Illustrating the various factors that go into the demand for emergency medical care, the model also suggests reasons for emergency department overcrowding. The input component of ED crowding in our conceptual model includes any condition, event, or system characteristic that contributes to the demand for ED services. In the throughput component, the four factors listed are potential contributing factors of overcrowding, highlighting the need to look internally at ED care processes and modify them as needed to improve their efficiency and effectiveness, especially those that have the largest effect on length of stay and resource use in the ED. The output component highlights the cyclical nature of emergency department crowding, illustrating different outcomes of entering an emergency department for treatment. It is widely reported that ED

crowding stems from the inability to move admitted patients to an inpatient bed, forcing the ED to board admitted patients until inpatient beds are available, and effectively reducing the ED's capacity to care for new patients. Additionally, those who walk in will in turn wait longer to be seen by physicians, bringing us back to the beginning of the cycle. Keeping patients in the emergency department longer also leads to healthcare practitioners being taken away from evaluating new patients, delaying care and ultimately contributing to longer wait times (Asplin et al., 2003).

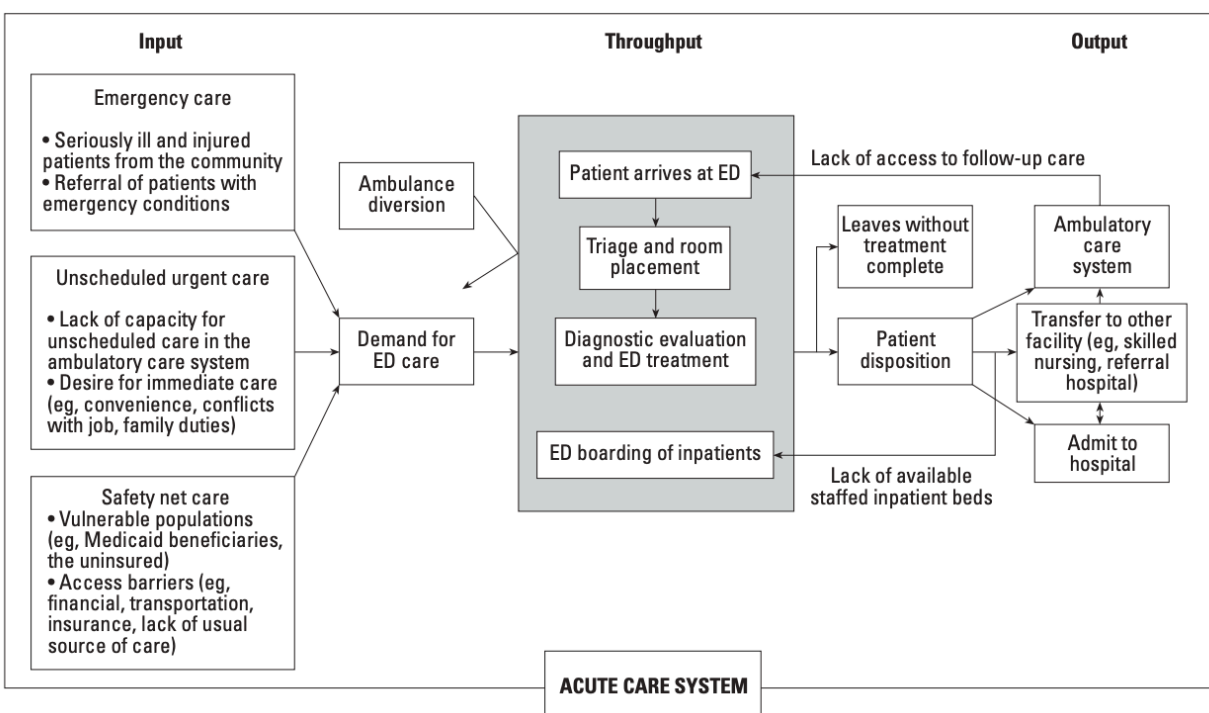


Figure 3 – Input-Throughput-Output Conceptual Model of Emergency Department Crowding
(Source: Asplin et al., 2003)

One important consequence of emergency department overcrowding that affects patients being brought in via emergency medical services is ambulance diversion. Seen in many major hospitals across the country, this occurs when the emergency department beds are close to or have reached capacity and hence stop accepting new patients. Emergency departments

remain in an ambulance diversion until beds become available when patients are moved out of the department, either being discharged home, admitted as inpatients into the hospital, or pass away (Hall, 2013). If ambulances are being diverted to other hospitals, this can delay patient care for diverted patients.

With delayed patient care comes risk of quality of patient care. A 2011 study by Dr. Adam J. Singer and colleagues investigated the association between length of emergency department boarding and mortality. The researchers found that mortality increased with increasing board times, from 2.5% in patients boarded less than 2 hours to 4.5% in patients boarding 12 hours or more (Singer et al., 2011). However, a 2019 study by Dr. Moon O. Lee and colleagues measured patient safety and quality outcomes using patients admitted to alternative care area inpatient beds; these include beds located in inpatient hallways, cardiac catheterization labs, and endoscopy rooms. Quality outcomes were measured as transfers to the intensive care unit, mortality, hospital-acquired infections, falls, and 72-hour hospital readmission. Alternative care inpatient beds were found to have shorter lengths of stay than those admitted to inpatient beds (roughly 2.7 days as compared to 3.4 days, respectively) (Lee et al., 2019). This implies further work is to be done to see if boarding patients in alternative care area inpatient beds is appropriate for emergency departments to adopt to combat crowding.

3.3 – The Role of Addiction Medicine

Hospital emergency departments serve an important role in medicine, especially for those with limited options for care due to insurance coverage. Recently, there has been a push for more primary care physicians given that the principal reason patients visit emergency departments for non-emergent outpatient care is due to the lack of timely options elsewhere (Gonzalez et al. 11, 2011).

Addiction treatment helps the individual stop using drugs, maintain a drug-free lifestyle, and achieve productive functioning in their life. Because addiction is a disease, most people cannot stop using drugs for a few days and be cured permanently. Rather, many patients require long-term or repeated episodes of care to maintain sustained abstinence and recovery (“Principles of Drug Addiction Treatment”, 2018). Methadone treatment has been shown to increase participation in behavioral therapy and decrease both drug and criminal behavior, but individual treatment outcomes depend on the extent and nature of the patient’s addiction, the appropriateness of treatment and related services used to address those addictions, and the quality of interaction between the patient and his or her treatment providers.

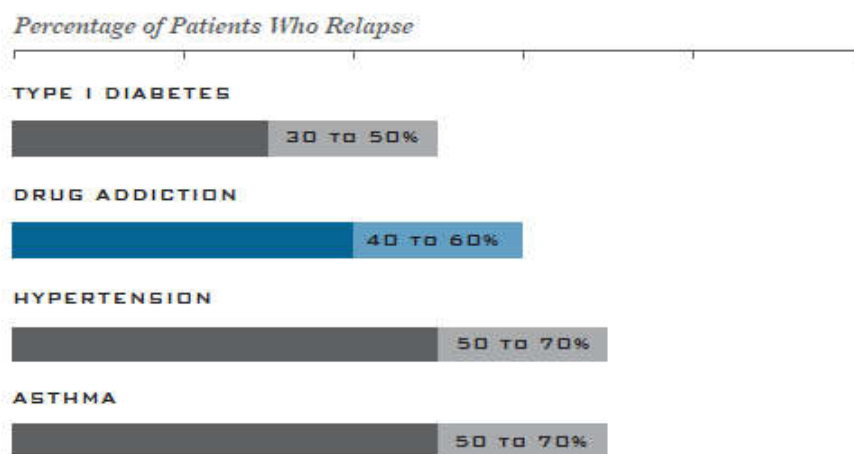


Figure 4 – Relapse Rates of Chronic Conditions
 (Source: “Principles of Drug Addiction Treatment”, NIDA, 2018)

There are currently three drugs used for the treatment of opioid-use disorder: methadone, buprenorphine, and naltrexone. All three are demonstrated to be effective forms of medication for treating opioid-use disorder, but not all of them are appropriate for all patients. For instance, naltrexone requires patients to undergo a minimum seven- to 10-day detoxification before initiation, which may not be right for patients who need to begin treatment immediately. Similarly, some patients are averse to taking opioid agonist drugs as part of treatment and may therefore prefer the use of naltrexone, an opioid antagonist (Jones A. et al., 2018). According to federal data, 41.2 percent of nearly 12,000 drug addiction treatment facilities throughout the United States offer one form of medication-assisted treatment, or MAT (Jones A. et al., 2018). Twenty-three percent of facilities report offering two or more forms of MAT, which are mostly naltrexone and buprenorphine. Yet only 2.7 percent of facilities offer all three forms of MAT, of which 234 (73.4 percent) report accepting Medicaid. Eight states do not have any facilities that report offering all three forms of MAT, and 14 states do not have a facility offering all three forms of MAT that also accepts Medicaid. To highlight this, a 2018 HealthAffairs article included maps using data from The Substance Abuse and Mental Health Services Administration's National Survey of Substance Abuse Treatment Services that represent the growing need for more access to addiction facilities and treatment.

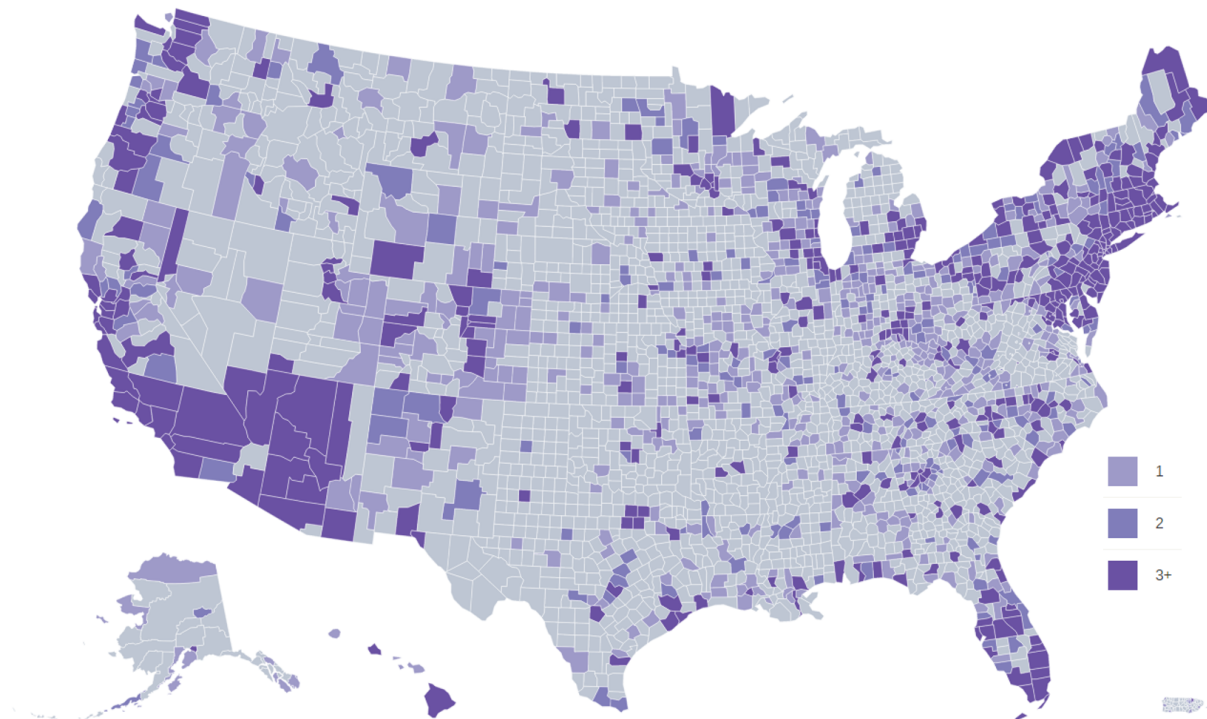


Figure 5 – Substance Abuse Facilities Offering Medication-Assisted Treatment, 2016
(Source: “Where Multiple Modes Of Medication-Assisted Treatment Are Available”, HealthAffairs, 2018)

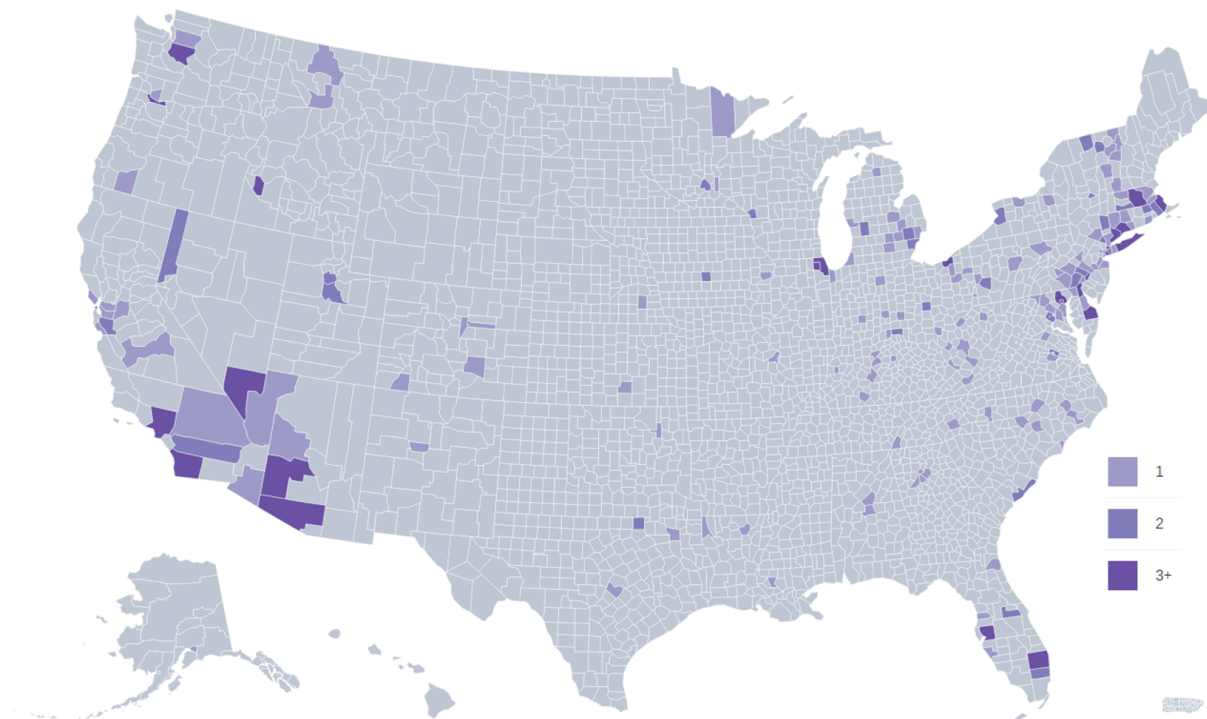


Figure 6 – Substance Abuse Facilities Offering All Three Forms Of Medication-Assisted Treatment, 2016
(Source: “Where Multiple Modes Of Medication-Assisted Treatment Are Available”, HealthAffairs, 2018)

These maps highlight significant gaps in medicated-assisted treatment programs throughout the United States. Most of these facilities are found in the Southwest and Northeast, regions with highly populated urban cities, whereas the remainder of the country has limited to no access. What is particularly striking is the lack of all-MAT facilities in states like West Virginia, Kentucky, and Tennessee, where the opioid epidemic is particularly hard-hitting.

So, why can't we just open up more facilities in these areas? Wouldn't this eliminate the need for emergency department usage? Not quite. The issue with seeking out an emergency department rather than going to a substance abuse facility often is a result of lack of insurance coverage. Emergency departments cannot deny care or treatment if someone does not have insurance coverage, thanks to the Emergency Medical Treatment & Labor Act ("Emergency Medical Treatment & Labor Act (EMTALA)", 2012). As of 2017, at least 13 states' Medicaid programs do not cover methadone treatment ("State Medicaid Coverage of Methadone for Treatment", 2017).

State Medicaid Coverage of Methadone for Treatment (2017)

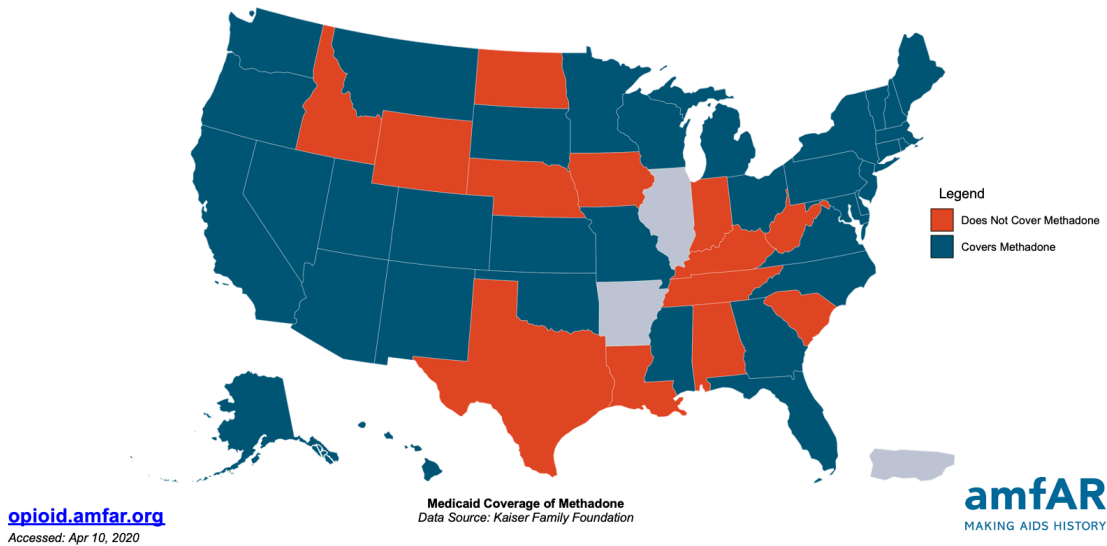


Figure 7 – State Medicaid Coverage of Methadone for Treatment, 2017
(Source: Kaiser Family Foundation, published by amfAR, 2017)

Due to the federal Institutes for Mental Diseases exclusion, federal Medicaid funds are prohibited from reimbursing services provided in inpatient facilities with more than 16 beds, except for the minority of states that have been granted waivers from this requirement (Jones A. et al., 2018). This leads way for future policies to advocate for increased access to MAT, but with these current statistics, it is clear that we have a long way to go.

Chapter 4 – Case Studies of Opioid-Related Emergency Department Visits and Future Implications for Strategy

As posed using actor-network theory, emergency departments have the potential to be more adaptive in their practices. A number of hospitals throughout the country are implementing strategies to help combat opioid overdoses from occurring, both in new and repeat patients, highlighting the potential for change in traditional emergency medicine. Two of these facilities are described below.

4.1 – Buprenorphine Induction Leading to Further Treatment: Highland Hospital, Oakland, California

Highland Hospital is a public hospital in California, owned by the Alameda Health System (“Alameda Health System Locations”, 2020). It is one of a few hospitals that are using their emergency department to begin addiction treatment. Specifically, Highland is using buprenorphine, a drug with similar properties to methadone in opiate detoxification and maintenance (Wesson and Smith, 2010). Proposed to be used for opiate-dependent patients in the late 1970s, clinical evidence suggests that buprenorphine is safer to use than methadone in an overdose situation (Jasinski et al., 1978; Wesson and Smith, 2010). The Drug Abuse Treatment Act of 2000 enabled physicians in the United States to prescribe buprenorphine, after completing additional training, to a limited number of opiate-dependent patients (Wesson and Smith, 2010). The drug comes in two versions of sublingual tablets: Subutex®, which

contains only buprenorphine alone, and Suboxone®, a combination of buprenorphine and naloxone. This opiate antagonist prevents other opiates from reaching opioid receptors in the body, therefore blocking those opiates from producing the typical side effects. Undetectable in a drug test, buprenorphine is making strides in becoming a normal treatment for opioid-dependent patients (Wesson and Smith, 2010).

An August 2018 article in the New York Times reports on Rhonda Hauswirth and her withdrawal from heroin after a day and a half of not using the drug. Ms. Hauswirth reported arriving at the hospital, “shaking violently,” unable to focus. Doctors gave her a sublingual dose of buprenorphine (more specifically, Suboxone), and Ms. Hauswirth recalled being able to “focus a little more” and “see straight,” also mentioning that she “had never heard of anyone going to an emergency room to do that” (Goodnough, 2018). Dr. Andrew Herring, the director of the buprenorphine program at Highland Hospital, told the New York Times, “With a single E.R. visit we can provide 24 to 48 hours of withdrawal suppression, as well as suppression of cravings. It can be this revelatory moment for people — even in the depth of crisis, in the middle of the night. It shows them there’s a pathway back to feeling normal” (Goodnough, 2018).

Dr. Herring was influenced by a 2015 Yale School of Medicine study, which found that addicted patients who were given buprenorphine in the emergency room were twice as likely to be in treatment a month later as those who were simply handed an informational pamphlet with phone numbers (D’Onofrio et al., 2015). The study was key in developing Highland Hospital’s buprenorphine program. Highland Hospital, along with seven other Northern California hospitals, experimented with dispensing buprenorphine in their emergency

departments to jump-start addiction recovery (Goodnough, 2018). Now, California is working to expand this effort to emergency departments statewide as a part of their “Medication Assisted Treatment (MAT) Expansion” program (“CA Hub and Spoke System: MAT Expansion Project”, 2017).

An adaptation of a system already used in Vermont, California’s expansion program uses the Hub and Spoke framework. Regions participating in the program will have a specialized addiction center of expertise, known as the Hub, that is an opioid treatment program (OTP). Each Hub is connected to a number of Spokes, which is any office or clinic with a buprenorphine prescriber. Spokes will have access to a dedicated MAT team, consisting of one registered nurse and one licensed clinical social worker for every one hundred patients on buprenorphine under Medicaid. Spokes have the ability to refer complex patients to the Hub in their region for stabilization (“CA Hub and Spoke System: MAT Expansion Project”, 2017).

At the end of the article, Dr. Herring recalls a weekly clinic he holds for his patients that started buprenorphine in the emergency department. He details the symptoms of withdrawal reported by Ms. Hauswirth and others, noting the reports of feeling like there is a “war” within their bodies. However, the reports of “doing well” should not be taken as a sign to stop taking medication. Rather, buprenorphine is to be treated as a “vitamin” and must be taken every day for it to be successful. Herring says, “You’ve torched everything, and the medication is letting it grow back, and it’s going to be beautiful, but it’s going to take some time” (Goodnough, 2018). It is clear to me that work being done in California is an important step for bridging the connection between the opioid epidemic and emergency departments.

4.2 – The Bridge Clinic: Brigham and Women’s Hospital, Boston, Massachusetts

In 2018, Harvard Medical School’s major teaching hospital, Brigham and Women’s Hospital, opened up the Brigham Health Bridge Clinic, being co-led by psychiatrists Dr. Joji Suzuki and Dr. David A. Gitlin (Linke, 2018). According to their website, the Bridge Clinic is a “rapid-access, low barrier clinic for patients with Substance Use Disorders (SUDs), including alcohol, opioids, benzodiazepines, cocaine, amphetamines, etc.” that “embrace[s] a harm reduction and compassionate approach for patients in all stages of recovery” (“The Brigham Health Bridge Clinic”, 2018). The clinic provides services, including all three forms of medication-assisted treatment, support links via recovery coaches and social workers in an individualized or group setting, connections to community resources for things like food, housing, identification cards, employment opportunities, and education, and makes a “bridge” to longer-term treatment that fits each patient’s self-identified path for sustained recovery when an individual is ready for that transition (“The Brigham Health Bridge Clinic”, 2018).

In an article for The Boston Globe, nurse practitioner team manager of Brigham and Women’s Primary Care Associates, Longwood, Kate Takayoshi claims that the goal of the clinic is to goal is “to get high-risk patients started with the medications and services they need immediately, then help them find the right program to support their recovery” (Brigham Health, 2019). The opening of the clinic reduces the number of patients who are lost to follow-up, defined as being discharged from the hospital and did not follow up to continue receiving outpatient treatment, and allows patients to be seen much sooner for their intake appointment (Brigham Health, 2019).

The Substance Abuse and Mental Health Services Administration runs a collaborative known as the State Targeted Response Technical Assistance (STR-TA), or the Opioid Response Network (“STR-TA”, 2020). In report published by them, Brigham Health reports that between April 2018 and January 2019, 277 patients from their emergency departments were referred to the Bridge Clinic, with 75% of those patients presenting for at least one appointment. Of those 75%, or 207 patients, that engaged with the Clinic, 85% remain in treatment (either at the Bridge Clinic or in longer-term care), emergency department visits decreased by 66% within the 3 months after referral (for patients with 3 months of follow-up after Bridge Clinic referral), and inpatient admissions decreased by 60% within the 3 months after referral (for patients with 3 months of follow-up after Bridge Clinic referral) (Herring et al., 2019).

4.3 – Future Implications for Strategy

From the above two case studies, it is evident that a successful intervention of a “bridge program” to connect emergency department patients to long-term care would be best to allow hospital emergency departments to maximize performance. Obvious root causes that would need to be addressed are those relating to why individuals overdose in the first place. The overall goal would be to reduce the volume of overdoses entering the emergency department, which would in turn maximize performance by reducing wait times.

To start, based on these case studies, patients with addictions might benefit from physicians who specialize in addiction medicine, psychiatry, emergency medicine, or other similar specialties aligning to develop bridge programs. It would be helpful for them to reach out to existing bridge programs, like those in California or Massachusetts, to assess if their strategies should be duplicated or tailored in order to avoid problems encountered by either

program. Physicians advocacy for such funding programs could be an important impetus for change. With such programs in place, providers could track the success of the program by seeing if patients seeing at bridge clinics are following through with care, by measuring mortality outcomes between those at the clinic versus those not using the clinic, and ultimately by seeing if emergency department crowding is mitigated.

Both of the bridge programs described above use a harm reduction model. Harm reduction is defined as “policies, programs, and practices that aim to minimize negative health, social and legal impacts associated with drug use, drug policies and drug laws... it focuses on positive change and on working with people without judgement, coercion, discrimination, or requiring that they stop using drugs as a precondition of support” (“What is Harm Reduction”, 2020). These bridge programs and others meet patients where they are, connect patients to longitudinal care, and are in a sense adapting emergency department care to the pressures of care necessary for opioid addiction. This inherently makes them adaptive institutions, as predicted by Latour.

However, there are many emergency departments that do not have these sort of bridge programs. Perhaps emergency departments are simply not the appropriate place for these patients to be seen. The movement to create an emergency medicine specialty was a medical movement, not a public health movement. It was set up to take care of individuals at a more efficient and appropriate level than the prior system; it was not intended for dealing with an epidemic, but rather emergent, non-chronic issues. It is evidently complicated for emergency departments to then be expected to perform public health duties while also performing their intended duties. However, this can also be seen as an opportunity for emergency departments

to become more adaptive; in taking up systems like bridge programs, emergency departments can expand their scope to understand the whole of the person by using harm reduction, rather than staying in a medical model for opioid addiction treatment. This may reveal a hole in our current healthcare system rather than it being the fault of emergency departments. As such, an understanding of social determinants of health, described in the following chapter, is relevant for examining why our emergency department system is the way that it is.

Chapter 5 – A Note on Social Determinants of Health

5.1 – Social Determinants of Health

As defined by the World Health Organization, social determinants of health are the conditions in which people are born, grow, live, work and age (“About social determinants of health”, 2017). This includes socioeconomic status, social support networks, and access to healthcare. Research shows that health outcomes are driven by an array of factors, including underlying genetics, health behaviors, social and environmental factors, and health care. While there is currently no consensus in the research on the magnitude of the relative contributions of each of these factors to health, it is suggested that health behaviors like smoking, diet, and exercise, as well as socioeconomic factors are the primary drivers of health outcomes, and socioeconomic factors can shape individuals’ health behaviors. This translates into children who are born to parents who have not completed high school being more likely to live in an environment that poses barriers to health such as lack of safety, exposed garbage, and substandard housing, and barriers to solving these negative health behaviors, like a lack access to sidewalks, parks or playgrounds, recreation centers, or a library (Artiga and Hinton, 2018).

In considering social determinants of health, the majority of opioid overdoses in the U.S. in 2018 were done by white, non-Hispanic individuals. Black, non-Hispanic individuals saw 6,088 opioid overdoses in 2018, and Hispanic individuals saw 4,370 opioid overdoses in the same year (“Opioid Overdose Deaths by Race/Ethnicity”, 2020). Looking at emergency department visits in 2017, 70.1% of visits consisted of white individuals, 26.1% of visits were from black individuals,

and 15.9% were Hispanic (“NHAMCS”, 2017). Though the data I examined did not specify socioeconomic status, previous contributions to negative health behaviors or social support networks, further studies can investigate how social determinants of health truly play a role in the relationship between emergency department visits and opioid overdoses.

Chapter 6 – Conclusion

This thesis would not be complete without mentioning the current pandemic that is impacting both emergency departments and the opioid epidemic. In April 2020, I attended the Yale Healthcare Conference through Yale University, focused on the novel coronavirus (COVID-19). In a panel focused on protecting vulnerable populations during this pandemic, emergency medicine physician Dr. Kathryn Hawk touched upon how her emergency department's response to the opioid epidemic has shifted in light of COVID-19. She noted that an emergency department is a "safety net" within the larger healthcare system and that emergency departments provide care to those who otherwise have no other means of accessing healthcare. Since 2015, Dr. Hawk shared that Yale-New Haven Hospital has been initiating buprenorphine in their emergency department, noting this was a "paradigm shift in what was previously care traditionally siloed to outpatient care or addiction-medicine providers and specialists" and connecting patients to longer term follow-up care outside of the emergency department (Hawk et al., 2020).

Overall, this shift in the way care is provided has become more of a patient-centered approach, making sure that the patient is at the heart of every decision made in their treatment plan. Dr. Hawk also shared that, in her experience, when a patient shows up to an emergency department wanting treatment and instead receives a paper prescription to seek care elsewhere, it is "demoralizing" to that patient's progress toward recovery. If conversations are started with "How can we help you today?" rather than "Let's get you in treatment right now,"

patients are more receptive to a physician's ideas, forming a provider-patient alliance (Hawk et al., 2020).

In tying this all together with the COVID-19 pandemic, Dr. Hawk describes prior experience of patients with addiction being traditionally negative experiences in emergency departments, with this environment being a negative and unwelcoming place for them to receive care. This is particularly relevant to the current pandemic because a lot of the care provided to these patients in emergency departments involves sit-down conversations with patients, sharing spaces, and with physical distancing restrictions in place to prevent the spread of the virus, emergency departments are having to figure out how to still provide these spaces and services for patients. With decreased access to outpatient services as a result of the pandemic, it is particularly important that emergency departments are available to solve unmet needs, including mental health referrals, medical treatment, and substance use treatment, and also extend buprenorphine prescriptions to account for closures of facilities that normally provide access to that. This population of patients seeking care is even more vulnerable, and it is important that other providers are aware of this so that those recovering do not fall through the cracks of our already stressed medical system (Hawk et al., 2020).

As such, our current events are highlighting even more the importance of the ever-evolving relationship between emergency departments and the opioid epidemic, and how the opioid epidemic poses challenges and opportunities for emergency departments to assess and improve their performance under duress. For many people, this is the first virus they have seen that has scaled to the level that COVID-19 has. Many, if not all healthcare systems are being impacted due to the nature of this virus, deepening already existing vulnerabilities in

populations throughout the world. Emergency departments are becoming more strained dealing with not only a novel virus but also previously present health crises. In the case of emergency departments and the opioid epidemic, future work is to be done to make sure that if patients do choose to seek out care in emergency department, those providers are fully prepared to deliver high-quality, patient-centered care, even in times of crisis.

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