

A background of the opioid epidemic and its relationship to the Medicaid expansion

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Abstract

Despite the recent increase in public awareness of the opioid epidemic, the background of this epidemic is still disappointingly unknown to the public. The opioid epidemic is a national crisis which impacts, not only individuals' wellbeing but the economy of the United States. The federal government sought to mitigate it through the enactment of the Patient Protection and Affordable Care Act. The Medicaid expansion, which was built into this law, sparked controversy; controversy which has yet to be solved to this day. Going forward, the knowledge we gather from examining the connection between this epidemic and the Medicaid expansion will be indispensable, for it is from studying prior successes and failures that we learn to improve.

A background of the opioid epidemic and its relationship to the Medicaid expansion

Introduction

The opioid epidemic, by 2017, was well on its way to causing more U.S. citizen deaths than World War II. Between 1999 and 2017, approximately 400,000 people overdosed from prescription and illicit opioids (Centers for Disease Control and Prevention [CDC], 2018). Now, in 2019, the significance of this nationwide crisis remains; as of January, a minimum of 130 people overdose on opioids per day in the United States (National Institute on Drug Abuse [NIH], 2019).

The opioid epidemic is a multifaceted problem; its roots and its progression are entangled with medical and social issues that spanned years. Another layer of complexity is added when the impact of legislative actions is considered. An example of a federal action which affected the opioid epidemic is the enactment of the Patient Protection and Affordable Care Act (PPACA), specifically the Medicaid expansion, which occurred under the presidency of President Barack Obama.

When and how did the opioid epidemic develop? What are opioids and why are they addictive? What are we doing to combat the opioid epidemic? Is the opioid epidemic connected to the Medicaid expansion? These are questions university students and the general population ask but struggle to answer because they do not have a grasp of the background of the opioid epidemic and the PPACA.

It is crucial for the people of the United States, especially the next generation of working adults, to understand the fundamentals of the opioid epidemic and the relevant legislation to answer these questions. Not only would the basic knowledge lead to answers to such questions, but it would also enable people to comprehend the

contemporary news in which the pervasive opioid epidemic would appear. This basic knowledge about the opioid epidemic and the Medicaid expansion can be acquired through familiarizing oneself with the history and science behind opioids, the objectives, and mechanisms of the PPACA, and through reviewing the recent research and debates surrounding the expansion of Medicaid and its relationship to the opioid epidemic.

The Opioid Epidemic: A Historical Background

When Purdue Pharma paid a settlement amount of \$600 million for misbranding OxyContin in 2007, the public became more aware of the unscrupulous marketing that pharmaceutical companies are capable of (Jones et al., 2018). Since then, large pharmaceutical companies and its owners have been blamed by the public for instigating and worsening the current opioid epidemic in the United States (Bebinger, 2019; Meier, 2007; Ng & Cotter, 2019). Also, doctors of pain management have pleaded guilty to prescribing opioid medication excessively (United States Department of Justice [Justice], 2018b; Justice, 2019a, Justice, 2019b). The background of this crisis, however, includes more than the marketing tactics of big pharma and the overprescription of opioids by clinicians; it involves underlying cultural trends of the twentieth century that nurtured the opioid epidemic to be what it is today.

The Long History Between Opioids and Mankind

The first record that exists regarding the use of opium, a “juice” extracted from the *Papaver somniferum* (poppy plant), dates back to 4000 BC (Brownstein, 1993; Pathan & Williams, 2012; “Sumer”, 2018). Records show that the Sumerians called the plant *hul gil*, or “plant of joy”. More references to opium in ancient history include the texts of the Odyssey, which were written by the famous Homer, who lived around 750 BC.

Historians believe opium made its way to China around the tenth to the thirteenth century through Arab trade routes. Opium reached Europe by the sixteenth century, evidenced by the reports of addiction and tolerance in Turkey, England, and Germany (Brownstein, 1993).

Opium played an important role in initiating and fueling the trade war between the Chinese and the British in the first Opium War (1839-42), and among the Chinese, British, and French in the second (1856-60). China witnessed a high rise of opium addiction amongst its people and was forced to sign unequal treaties of trade.

Unfavorable trading and opium addiction in China caused a severe weakening of the labor force and economy and is noted today as one of the main reasons the Qing dynasty buckled in the twentieth century (Pletcher, 2018).

A Backdrop to the Current Opioid Epidemic

The discoveries of the nineteenth century changed how mankind largely used opium and opiates (poppy derivatives). Morphine was extracted for the first time in 1806, and heroin was created in 1898 and proclaimed non-addictive. In 1850, the hypodermic needle was invented and it revolutionized pain medicine; morphine began to be injected as pain medication and as a supplement to anesthesia (Brownstein, 1993). However, even with these novel discoveries and the rebirth of opium as opiates, the use of them was avoided by both clinicians and patients (Jones et al., 2018).

Opiates and opioids¹, despite being available for medicinal use, were widely unused until the mid-1900s because of two reasons. First, these analgesics carried a

¹ For clarification: Opiates refer to drugs derived from opium, and opioids refer to synthetic drugs that behave in a similar manner to the active compounds isolated from the poppy plant. In this paper, unless there is a need to distinguish between opioids or opiates, opioids assume both categories.

stigma; opioids were widely associated with heroin addicts, who were beginning to emerge on the streets (Jones et al., 2018). The Harrison Narcotic Act of 1914, enacted as a response to the escalating heroin addiction, also discouraged physicians from prescribing opioids, and “opiophobia” became pervasive (Hunt & Urch, 2013). Second, the culture did not regard pain as something to be treated but as a common and natural symptom of aging (Jones et al., 2018). In the 1920s, people went as far as to say those who received pain medication (who were mostly cancer patients) were “abusers” or “deluded” (Jones et al., 2018).

Society’s opiophobia would have faded slowly, or not at all if it was not for a change in the society’s perception of pain that began because of misinformation. In the early 1980s, two brief publications emerged and ultimately turned the tide of society’s perspective on pain treatment. These publications claimed opioid addiction rates to be low in patients (as low as 0.03%; Jones et al., 2018). Although both studies did not back up their propositions with evidence, researchers and clinicians, and later the public, succumbed to this belief (Jones et al., 2018). Pain became known as the “fifth vital sign”, diagnosed according to patients’ reported pain on a scale of one to ten (Quinones, 2015). The World Health Organization, the Veteran’s Health Administration, the Joint Commission, the newly formed American Pain Society, and more, campaigned for the increased use of opioids as a treatment for the epidemic of undertreated pain (Jones et al., 2018).

Following the Joint Commission’s rules about providing proper pain control, clinicians tried to compensate for the neglect of patient pain by increasing prescription opioids (Jones et al., 2018). Hospitals became more invested in opioid therapy (Jones et

al., 2018), and pharma rapidly escalated their revenue by dispensing more opioid medication. Purdue Pharma saw their profit reach \$1 billion on the cusp of the twenty-first century, after debuting OxyContin in 1996 (Meier, 2007). McKesson Corporation, Costco Wholesale, and Cardinal Health, large opioid manufacturing and distributing companies, are also likely to have made large profits, as they recently reached government settlements for falsely reporting opioid medication orders large in size or high in frequency during the early 2000s (Levin Papantonio, n.d.). Since the case settlement for misbranding OxyContin in 2007, three executives of Purdue Pharma admitted to misinforming physicians, patients, and regulators about the risk of addiction and abuse entailed in opioid use (Meier, 2007).

Such news about fraudulence and deception in pharmaceutical companies has created the idea amongst the general public that those in the healthcare system are solely responsible for the opioid crisis (Bump, n.d.; Thompson, 2019). In a survey conducted by Siena College Research Institute, New Yorkers were asked to pick the single most responsible entity for the opioid epidemic. The top three answer choices were the following: “Doctors over-prescribing opioids”, “Allowing patients access to too many pain pills”, and “Pharmaceutical companies promoting legal drugs without fully warning about risks” (Bump, n.d.).

While the general public’s blame on pharmaceutical companies and doctors is well-evidenced by numerous cases, it is important to note that these companies and healthcare providers were not exclusively at fault. By prescribing opioids, clinicians were responding to more than the “under-treated pain epidemic” and pharmaceutical giants were taking advantage of more than the society’s lack of understanding about pain.

Clinicians were influenced by societal factors more than ever (Knight et al., 2017). In 2017, Knight and colleagues interviewed 23 primary care clinicians, located in San Francisco, to hear their thoughts on the practice of medicine during the growth of the opioid epidemic. The interviewed clinicians discussed how there were studies that were done in the mid-'90s that demonstrated discrimination against people with a background in poverty, unsafe communities, and complex and chronic medical conditions in the medical field (Knight et al., 2017). According to the interviewees, the results of such research incentivized clinicians to be more attentive and responsive to the patients' complaints, especially about untreated pain. By validating their pain through opioid treatment, physicians hoped to increase medication adherence and serve the impoverished with fairness (Knight et al., 2017). Knight et al. (2017) simply described the clinicians' response as "the need to do something" (p. 3).

Pharmaceutical companies and clinicians have been the main targets for the public when it comes to the search for the culprits of the opioid epidemic. In 2018, there were reportedly more than 600 lawsuits against opioid manufacturers and distributors (Working Partners, 2018). Numerous doctors have also been prosecuted for running "pill mills" (Berry, 2018; Justice, 2018a). While these allegations and legal proceedings do indicate pharma's and clinicians' involvement in the opioid epidemic, they fail to explain the societal context in which the opioid epidemic developed. To a certain extent, clinicians and pharmaceutical companies were not simply responsible; they were responders to cultural movements that advocated for "humane treatment" for those in pain and that opposed racial and class bias (Jones et al., 2018; Knight et al., 2017). An overview of the opioid history shows that the root of the current crisis extends beyond the

recent years where opioid abuse has received more public attention; instead, it lies in the ever-evolving opioid research and the changes in society's perception of pain and opioids.

The Opioid Epidemic: A Scientific Background

To comprehend the medical use of opioids and the treatments available for people struggling with opioid addiction, it is important to understand opioid pharmacology. Basic pharmacology discusses the way opioids work, its effects, and its uses. This section will, in addition to opioid pharmacology, define some terms important for clarifying the meaning of addiction, introduce basic classifications of opioids, and describe common opioid addiction treatments.

Opioids cause analgesia by binding to opioid receptors on a variety of cells. The three known receptors include mu, kappa, and delta receptors. Among the three receptor kinds, mu receptors are the main mediators of analgesia (Pathan & Williams, 2012). The binding of opioids to their receptors induce protein cascades which lead to hyperpolarization of the cell by modulating calcium and potassium ion channels (Al-Hasani & Bruchas, 2011). The net effect is the reduction of neurotransmitter release. In the midbrain, mu receptor activation follows this general pattern of dampening nociceptive signals from peripheral afferent neurons in the spinal cord. Thus, a patient's perceived pain mitigated (Pathan & Williams, 2012). Opioid receptors are dispersed throughout both the central and peripheral nervous system but are more concentrated in the former. Example loci with opioid receptors in the peripheral nervous system include the gastrointestinal tract, heart, immune system, knee joints, vas deferens, and more

(Pathan & Williams, 2012). The central nervous system, however, is thought to be the seat of opioid addiction.

Research investigating the neurobiology of addiction has largely focused on the dopaminergic mesolimbic pathway, which plays a part in controlling motivational states in humans and other animals (Hunt & Urch, 2013). Motivational states, which drive motivated behaviors, are triggered by homeostatic needs (i.e. thermoregulation) as well as external incentives that are aversive or rewarding (Koob, Everitt & Robbins, 2012). The mesolimbic pathway, which connects the ventral tegmental area (VTA), the nucleus accumbens, amygdala, and the medial prefrontal cortex, is also known as the “reward” pathway (Hunt & Urch, 2013; Koob et al., 2012). The primary neurotransmitter of this reward pathway is dopamine (Koob et al., 2012). Studies have demonstrated links between behaviors associated with drug addiction and the activation of the reward pathway (Hunt & Urch, 2013).

Effects

Opioid receptor activation causes the feeling of contentedness, satisfaction, and euphoria (Pergolizzi, LeQuang, Berger, & Raffa, 2017). Additionally, opioids have multiple side effects on the brain and the body. Opioids are neurotoxic and can cause dizziness and sedation (Baldini, Von Korff, & Lin, 2012). Relating to the gastrointestinal system, chronic opioid therapy commonly causes constipation. In the respiratory system, it causes respiratory system depression as well as bradycardia, hypotension, and sleep-disordered breathing, all of which could be life-threatening. These respiratory effects appear to worsen with higher dosages (Baldini et al., 2012).

Dose-dependent side effects also occur in the endocrine system. Opioids impact the production of hormones directly at the hypothalamic-pituitary-adrenal axis. Opioids inhibit their release from the anterior pituitary. In males, this inhibition may lead to androgen deficiency (hypogonadism), and in females, osteoporosis, oligomenorrhea, and galactorrhea (Baldini et al., 2012). Further research is needed on the musculoskeletal system, cardiovascular system, and immune system (Baldini et al., 2012).

Uses

In clinical settings, opioids are used as analgesics to alleviate cancer pain, pain at the end-of-life, and acute pain. They have also been used to treat chronic non-malignant pain (CNMP) although, recently, research has questioned the efficacy of opioid medication for CNMP treatment (Rosenblum, Marsch, Joseph, & Portenoy, 2008).² Outside of the clinical setting, opioids are used inappropriately in a variety of ways because of their pleasant effects; people may use opioids to alleviate stress, lighten moods, achieve euphoria, and more (Rosenblum et al., 2008).

Addiction, Dependence, and Analgesic Tolerance

Opioid addiction or opioid use disorder (OUD) is defined by the compulsive use of opioids and chronic relapse (Hunt & Urch, 2013). Compulsive use is indicated by the constant use of opioids by individuals despite the harm it causes to the physical and psychological health of the individual. Relapse in OUD may occur even after many years (Hunt & Urch, 2013). The term dependence is not interchangeable with the term addiction (Hunt & Urch, 2013). Dependence refers to the physical and psychological

² According to Rosenblum et al. (2008), chronic pain is defined as pain that has persisted for at least a month proceeding the usual healing time of an acute injury, pain that is associated with a non-healing lesion, or pain that frequently recurs over a period of months. Most often, chronic pain is referred to as pain that has persisted over a period of three months.

effects of withdrawal that occur with a sudden drop in dose or stop in drug administration (Hunt & Urch, 2013; Rosenblum et al., 2008). Addiction, on the other hand, is a chronic disease where the individual suffers symptoms such as craving, along with the loss of control (Hunt & Urch, 2013).

Analgesic tolerance is also commonly mistaken as a manifestation of opioid addiction. Analgesic tolerance is the “decreased subjective and objective effect of the same amount of opioids used over time, which concomitantly requires an increasing amount of the drug to achieve the same effect” (Rosenblum et al., 2008, p. 7). Thus far, although analgesic tolerance is existent in definition, has been debated whether it actually occurs in patients undergoing chronic opioid treatment. The current understanding of the scientific community maintains a distinction between analgesic tolerance and OUD (Hunt & Urch, 2013).

Classification of Opioids

A brief introduction to opioid medication terminology and classification is helpful for comprehending the basic pharmacology of OUD medications. The first classification method for opioids depends on which receptor(s) the opioid binds to. Even if the opioid binds to more than one, this organization is useful because it infers the potency and side effects of the drug that is tied to characteristics of mu, kappa, and delta receptors. This mode of classification is most often used in research. Prior to the discovery of synthetic drugs, however, the primary mode of classification depended on the chemical composition of the drugs. The categorization depended on which opium-extracted compound it was if it was an opiate (Pathan & Williams, 2012).

In clinical settings and among the general public, opioids are usually classified by their effects on opioid receptors. The categories include full agonists, antagonists, partial agonists, and mixed agonist/antagonists. Full agonists, such as morphine, produce the maximal effects of analgesia through MOR, its preferred opioid receptor. Antagonists have the opposite effect; binding produces no functional response and therefore inhibits receptor activation (Pathan & Williams, 2012). For example, naloxone is a well-known antagonist drug administered to overdosed patients (“Naloxone Injection”, 2016). Partial agonists elicit a limited agonistic response, independent of the dose. Mixed agonist/antagonists have both agonistic and antagonistic effects, differing according to which receptor they bind to. Both partial agonists and mixed agonist/antagonists compete with agonists if agonists are present (Pathan & Williams, 2012).

Drug scheduling is a layout used by the United States Drug Enforcement Administration (DEA) to grade drugs according to the entailed risk of addiction. Drug scheduling, therefore, is not a method of classification based on the innate characteristics of opioids. Drug schedules span from Schedule I to Schedule V. Schedule I drugs, such as heroin, are not used in medical settings and are labeled for their high potential for addiction (DEA, n.d.). Schedule IV and V drugs, on the other end of the spectrum, include drugs that have a low risk for abuse and consist of low amounts of opioids. Although drug scheduling is primarily used by the DEA, it is also used to describe different treatment drugs for opioid use disorder (OUD; DEA, n.d.).

Medical Treatments for Opioid Addiction

With the establishment of the Fifth Edition of *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), moderate to severe addiction is referred to as OUD

(Substance Abuse and Mental Health Services Administration [SAMHSA], 2018). To be diagnosed with OUD by current standards, a patient must have had at least two out of eleven of the symptoms indicative of OUD within the last year (SAMHSA, 2018). Those with OUD have an option to undergo pharmacotherapy accompanied by counseling and behavioral therapy. It is recommended the three are done in combination. Altogether, they are called medication-assisted therapy (MAT; MedlinePlus, 2018).

Those who have OUD receive treatment for various lengths of time, and often individuals receive treatment for the rest of their lives. Pharmacotherapy is used in both short-term and long-term therapies to treat opioid cravings, withdrawal, abuse, addiction, overdose, and more (SAMHSA, 2018). Medications approved by the FDA to be used in opioid treatment programs (OTP) include methadone, buprenorphine, and naltrexone. These medications have been proven repeatedly to play a crucial role in reducing the risk of overdose-induced deaths, the use of illicit drugs, and in maintaining positive behavior and habits related to opioid use in those with OUD (SAMHSA, 2018).

Buprenorphine. As a partial agonist, buprenorphine has a “ceiling” to its negative side effects. Its high affinity for mu receptors enables it to compete with other opioids and therefore reduces euphoria or side effects the patient is experiencing caused by the other opioids. In those who do not have other opioids in their system, it reduces opioid cravings and symptoms of withdrawal (SAMHSA, 2018). Buprenorphine commonly comes in the form of tablets or films but can also be injected. Because buprenorphine is susceptible to abuse, it is classified as a Schedule III drug and can only be prescribed by physicians, nurse practitioners, and physician assistants. It is often combined with naloxone (i.e. Suboxone) to combat misuse. Naloxone is a mu receptor

antagonist with a short half-life. By combining buprenorphine with naloxone, the initial agonistic effects (euphoria) of buprenorphine are masked, and this lowers the likelihood for abuse (SAMHSA, 2018).

Methadone. Methadone as OUD treatment can be administered as a liquid concentrate, powder, tablets, or dispersible tablets. It is the longest known treatment for OUD and research shows its use throughout the years has lowered mortality rates and use of illicit drugs (SAMHSA, 2018). According to a Cochrane meta-analysis, methadone has a higher rate of retaining patients in opioid treatment than buprenorphine and reduces illicit opioid use to the same degree as buprenorphine (SAMHSA, 2018). It falls in the category of Schedule II because it is a full mu receptor agonist which includes all the effects opioids entail with no ceiling effect, unlike buprenorphine (DEA, n.d.). As a Schedule II medication, only OTPs, overseen by SAMHSA, may prescribe methadone. According to SAMHSA's Treatment Improved Protocol 63 (TIP-63), it is recommended to begin methadone treatment with low doses and increase in dose slowly (SAMHSA, 2018).

The reason to begin "low and slow" is because methadone has less likelihood to lead to tolerance if it is administered carefully (SAMHSA, 2018). Specifically, if a certain dose in an individual can suppress opioid withdrawal and cravings, this same dose of methadone can be used for the rest of the duration of the individual's treatment. Although methadone use does cause various side effects, methadone's ability to suppress cravings and withdrawal without eliciting euphoria and methadone tolerance makes methadone a commonly used OUD treatment (Bart, 2012).

Naltrexone and Naloxone. Naltrexone is a slow-acting mu receptor antagonist and it does not have any effects related to opioids. It merely binds to mu receptors without inducing any effects and therefore it will not incur any symptoms of withdrawal when treatment is stopped. Naltrexone has a 95% rate of occupying mu receptors and thus displaces other present opioid agonists and partial-agonists (Bart, 2012). Therefore, when a person is administered naltrexone and other opioids, naltrexone will block the binding of present opioids to the mu receptors (SAMHSA, 2018).

This medication is most often found in combination with buprenorphine or as a prevention mechanism for relapse after medically supervised withdrawal. Although it is useful in that it has no abuse liability, treatment adherence is low (SAMHSA, 2018). A likely cause of low adherence among those with OUD is naltrexone's effect of causing precipitated withdrawal (Bart, 2012). Precipitated withdrawal occurs when naltrexone is administered prior to the clearing of other opioids in a person. If opioids are not clear before treatment with naltrexone, withdrawal symptoms may be brought about by the replacement of the bound agonists by naltrexone at mu receptors (SAMHSA, 2018).

Naloxone, like naltrexone, is an opioid receptor antagonist. Unlike naltrexone, naloxone is not well-suited as a MAT medication because it works rapidly. Rather, it is used as an injection or nasal spray to reverse the effects of an opioid overdose. Many states permit the dispensation of naloxone without a prescription, as it is non-addictive and can save lives (Office of the Surgeon General, 2018).

The Affordable Care Act

Introduction

The Patient Protection and Affordable Care Act (PPACA), colloquially known as “Obamacare,” was passed on March 23, 2010, by President Obama (Henry J. Kaiser Family Foundation [KFF], 2013). Short after its legislation, the Health Care and Education Reconciliation Act of 2010 was also passed (HealthCare.gov, n.d.a). The PPACA and the Health Care and Education Reconciliation Act of 2010 are collectively known as the Affordable Care Act or the ACA.

The ACA’s objectives can be divided into the three following components: to expand healthcare, to enhance healthcare, and to slow down the growing cost of healthcare (Davis, Guterman, & Bandiali, 2015; KFF, 2013). Through certain commissions and regulations, the ACA aimed to expand health insurance coverage and enhance the benefits of the insurance (KFF, 2013). There are several components of the ACA that are most relevant for those who are interested in educating themselves about the opioid epidemic.

ACA’s Objectives and Strategies for Implementation

The first objective of the ACA, the expansion of health insurance coverage, can otherwise be described as decreasing the number of people without healthcare insurance. The ACA used several different tactics to accomplish this, including the creation of an individual mandate, some employer requirements, the expansion of Medicaid, and the establishment of health insurance markets (KFF, 2013). The ACA’s strategies for its second objective, to enhance health insurance, can be summarized in three highlights; the well-known essential benefits package, a minimum criterion for basic health insurance, and reconstruction of Medicare and Medicaid (KFF, 2013).

Through examining the ACA, it is important to keep in mind the make-up of the uninsured population the ACA planned to minimize. The uninsured, approximately 46.5 million people in 2010, mostly consisted of those who could not financially afford health insurance (KFF, 2018). However, there was a portion of uninsured who could afford health insurance but opted to not be in any plan. There were also those who were uninsured in previous years because of their pre-existing medical conditions, whether they could or could not afford health insurance. One reformation which the ACA brought to healthcare focused on this last group. The ACA prohibited insurers from refusing insurance plan buyers with pre-existing medical conditions (Chernew & Newhouse, 2017).

The individual mandate and employer requirements. The individual mandate called for every citizen and legal resident in the United States to acquire a health insurance plan. As put into effect in 2014, the ACA imposed a tax penalty on those who did not follow the individual mandate. The ACA also initiated taxation on larger businesses (50 or more employees) if they did not offer health coverage to their employees (KFF, 2013). Smaller businesses, otherwise tax-exempt, were given tax credit if they did enroll their employees in health insurance plans. Both the individual mandate and employer requirements were a part of the ACA's plan to increase access to health coverage and a crucial part of funding the nationwide health insurance coverage.

Expansion of Medicaid and premium subsidization. Medicaid, a federal program dedicated to subsidizing medical costs for those with limited income, was expanded to include more people under the ACA. Prior to the ACA, Medicaid eligibility cut-off determinations were complex and strict (KFF, 2015). Eligibility depended on the

applicant's age, whether the applicant had dependents and their status in the range of the federal poverty line (FPL). For example, in 2013, before the Medicaid income eligibility was changed by the ACA, the average income cut-off for working parents was 61% FPL (KFF, 2015).

The ACA expanded eligibility up to 138% FPL (KFF, 2015). The ACA also allowed those within 100% and 400% FPL to receive premium tax credits. Premium tax credits permitted individuals who fell within this range to have a discount for their health insurance premiums (HealthCare.gov, n.d.b). Under the ACA, the eligibility for CHIP (Children's Health Insurance Program) was also established at 138% FPL for children up to the age of 19. Children within 133% FPL were also shifted into Medicaid in order to secure health insurance coverage for them because, at the time, the future of CHIP continuation remained uncertain (KFF, 2014).

Health insurance exchanges. As per the individual mandate, those above 138% FPL were likewise required to find health insurance. Those who were in this category could find health insurance plans on health insurance exchanges or through their employers if their employers offered any. Exchanges titled SHOP (Small Business Health Options Program) were also available for any small business wanting to offer health insurance plans to their employees (KFF, 2013).

These online Marketplaces, available beginning 2014, were run by the state or by the federal government, depending on the state (Centers for Medicare & Medicaid Services [CMS.gov], 2018). However, whether the Marketplace was managed by the state or by the federal government, the insurance plans on display were required to meet a national standard for quality (further explained under *Essential Benefits Package*).

Exchanges open to individuals and SHOP were another part of the ACA's effort to increase access to health insurance (KFF, 2013).

Essential benefits package. Whether it was a plan offered outside of the Exchanges or inside, all insurers were required by the ACA to, at a minimum, include the set of medical services the essential benefits package listed (KFF, 2013). Each health insurance plan, according to the essential benefits package, covered the following: Ambulatory patient services, emergency services, hospitalization, prescription drugs, rehabilitative and habilitative services and devices, laboratory services, preventive and wellness services, pediatric services, pregnancy care, maternity care, newborn care, and mental health and substance use disorder services (HealthCare.gov, n.d.c).

Medicare and Medicaid reconstruction. Another method the ACA used to enhance the quality of health insurance was by creating and funding the Center for Medicare and Medicaid Innovation (CMMI). The CMMI's purpose was to architect new models of payment for Medicare and Medicaid patients and new models of disbursement for healthcare providers (KFF, 2013).

One chief scheme of payment put into play with the ACA was between hospitals and the national health programs. This new model of payment was contingent on a new rebate system. The new rebate system, called bundled-payment, was different in that, instead of the amount of reimbursement the health services received depending on the volume of services, it depended on the value of the care provided (Abrams et al., 2015).

States which remodeled their legislative process of medical malpractice also received funding. Preventative health care and wellness were encouraged through small changes such as requiring franchise food services to display the nutritional content of

food (KFF, 2013). Prevention and wellness were also promoted through bigger changes, such as investing 11 billion to building community health centers, including school-based health centers and nurse-managed clinics (KFF, 2013).

ACA's objectives and strategies: Conclusion. Overall, the ACA expanded health insurance by making it mandatory for all and increasing access to all. To accomplish the latter, the ACA helped those who struggled to gain access to health insurance. To help those who could not financially afford insurance meet this law, the ACA extended Medicare and Medicaid coverage to more people (KFF, 2013). For those who could not find insurance due to previous health conditions, the ACA prevented insurers from refusing such people. For others, who could afford insurance but did not have it, the ACA opened up market exchanges of insurance plans and required employers to offer health insurance plans (KFF, 2013).

The expansion of access to healthcare was accompanied by the enhancement of healthcare. Enhancing healthcare consisted of both large scale changes, such as establishing new models of payment, and small scale changes. The expansion and enhancement made health insurance more accessible, affordable, and improved the quality of care (Abrams et al., 2015). However, these improvements came with costs.

ACA's Mechanisms for Funding

The ACA enacted by President Obama had multiple arrangements for its financing (Chernew & Newhouse, 2017). Taxation and the "pooling" of populations with varying degrees of "risk", two of many financing mechanisms, were not only designed to be sources of funding but as means to increase the insured population. Others, such as higher premiums for lower risk people and charging for medical services at the point of

service, were created to alleviate the federal government's monetary burden by spreading the healthcare costs amongst lower risk people (Chernew & Newhouse, 2017).

Taxation (individual mandate and employer requirements). The individual mandate penalized those who did not obtain health coverage under the ACA. The penalty tax was slowly introduced between 2014 and 2016, when the cost of the tax incurred was adjusted to 2.5% of the income reported per family or \$695 per adult (KFF, 2013; Healthcare.gov, n.d.d). The employer requirements, similarly, imposed fines for employers who were responsible for full-time employees with tax credits (KFF, 2013). The ACA additionally included a high-cost plan tax (HCPT), colloquially known as the "Cadillac tax." This excision tax planned to tax insurers who offered healthcare plans with expensive premiums (\$10,200 for individuals, \$27,500 for families) at a rate of 40% of the plans (Glied & Striar, 2016)). As of 2018, the enactment of HCPT was pushed back to 2022 (Myers & Jones, 2018).

Cross-subsidization and others. By requiring all citizens and U.S. residents to receive insurance coverage, the ACA did more than increasing the number of people covered by health insurance. Through the individual mandate, the employer requirements, and by lowering of healthcare plan costs, the ACA sought to pool the healthy, "low-risk" population, with the sick, high-risk population (Chernew & Newhouse, 2017). Through pooling, the insurance companies' increased spending was offset by added insurance purchases by people with lower risk (Chernew & Newhouse, 2017).

ACA's mechanisms for funding: Conclusion. Previously, efforts to make healthcare services value-based and payments more efficient were introduced as methods

to expand and enhance healthcare. However, they were also implemented as mechanisms to slow down the growing cost of healthcare. Likewise, efforts to minimize waste and fraud were also methods of conserving costs (KFF, 2013). According to Dr. Michael E. Chernew, this topic – pertaining to the mechanisms of healthcare funding – is where the main debate lies about the ACA and its uncertain future (Chernew & Newhouse, 2017).

Medicaid Expansion and the Opioid Epidemic

One of the leading arguments against the ACA associates the Medicaid expansion with the opioid epidemic (Adolphsen, 2017). This debate of whether the opioid epidemic was worsened by the expansion of Medicaid became especially heated during 2016 and 2017 when President Donald Trump was elected and took office. This argument is difficult to address because the opioid epidemic is a multi-faceted issue and the influence of the Medicaid expansion is difficult to quantify; there is no clear cut answer to this debate. There are several arguments for and against Medicaid expansion's role in the opioid epidemic. These arguments are based on a wide range of topics, which include the fraud and abuse found in healthcare systems, MAT, MAT's inclusion in the essential benefits package, and more.

A Comparison of Mortality Rates in the Expansion States versus the Non-expansion States

One well-known argument that denies Medicaid expansion as a cause of the epidemic focuses on the date of Medicaid expansion (Goodman-Bacon & Sandoe, 2017; Johnson, 2018). This argument is a refutation of a study which contrasted drug-related death rates between expansion and non-expansion states. The data demonstrated a higher rate of death in expansion states between 2010 and 2015 than in non-expansion states

(Goodman-Bacon & Sandoe, 2017). Those who are advocates of Medicaid expansion point to the date when Medicaid expansion began offering essential benefits packages to refute the connection. According to Goodman-Bacon and Sandoe (2017), the rise in opioid deaths preceded the enactment of the ACA; the number of deaths related to opioids doubled during 1999 and 2013, prior to the states' expansion of Medicaid which occurred in 2014. Because the mortality rate was rapidly increasing prior to the expansion in 2014, they believe any studies focused on the escalation of death rates between 2010 and 2014 are irrelevant (Goodman-Bacon & Sandoe, 2017; Thurston, 2017).

Others, however, do not consider 2014 to be the year in which the Medicaid expansion began to exert its effects. Although the implementation of the expansion began in 2014, the law was passed in 2010. Those who associate the Medicaid expansion with the epidemic claim that states and healthcare providers, therefore, most likely anticipated the coming Medicaid expansion and acted accordingly. For the states wishing to expand, this meant encouraging the uninsured to receive coverage, whether it was through their employers, in the market exchanges, or through Medicaid. Such anticipatory trends are reflected in the uninsured rates between 2007 and 2015; expansion states, even prior to 2014 when the individual mandate was launched, had a drop in the number of those who were uninsured (Spotted Toad [Toad], 2017). This parallel between decreased uninsured rates and the increased death rates suggests the actual expansion date of Medicaid as an unreliable setpoint to study regarding the expansion's connection to the opioid epidemic.

A Comparison of Change in Insurance Coverage Pre-ACA and Post-ACA

Another argument which refutes a relationship between Medicaid expansion and the opioid crisis is contingent on the magnitude of change in insurance coverage before

and after the ACA was put into play (Toad, 2017). That is to say, in the research behind this case, regions were not compared for expanding or not expanding Medicaid. Instead, regions of the United States were sorted by the magnitude of change they saw in their insured population. The regions were contrasted to other regions which may have seen less or more changes in insurance coverage under the enactment of the ACA.

The argument presents a comparison between the drug-related mortality rates among various counties which were organized according to the amount of change in their uninsured population (Goodman-Bacon & Sandoe, 2017). First, they established that areas which had higher amounts of uninsured people prior to the enactment of the ACA would see the most change in their insurance coverage post-ACA. Therefore, they hypothesized that, if Medicaid expansion did have a negative impact on the opioid epidemic, there would be a direct correspondence between the degree of change in the uninsured population and the rate of opioid-related deaths. Goodman-Bacon and Sandoe did not find this correspondence. Their study indicated counties with less insurance coverage before Medicaid expansion had lower rates of drug-related deaths. Instead, the regions which had more insurance coverage prior to the expansion (and therefore smaller change in uninsured population) had their mortality rates increased after the ACA. Thus, they concluded that the Medicaid expansion did not play a role in exacerbating the opioid epidemic (Goodman-Bacon & Sandoe, 2017).

A rebuttal against this research targets the main assumption of Goodman-Bacon and Sandoe's hypothesis (Toad, 2017). According to Toad, the magnitudes of change in insurance coverage did not provide accurate prognoses of Medicaid expansion's impact. He claimed that insurance coverage, however, should and did correspond to opioid-

related death rates. The areas noted for smaller changes in insurance coverage had smaller magnitudes in insurance expansion because they were already most covered. He supported his claim by observing the states with high growth in overdose rates after the enactment of the ACA. Several of these states had 85% insurance coverage prior to the ACA and were considered regions which witnessed a small change in insurance coverage in Goodman-Bacon and Sandoe's study (Toad, 2017). Toad, through his research, went beyond refuting Goodman-Bacon and Sandoe's research. He explained that the connection between states with small increases in coverage and their heightened mortality rates actually supported the main assertion made by the proponents of the "Obamacare-Opioid connection" (Toad, 2017).

Medicaid Fraud and Abuse

In addition to Toad, others who advance the Obamacare-Opioid connection emphasize the following argument the most: Medicaid expansion intensified the opioid epidemic by creating "perverse incentives" which multiplied fraud and abuse (Eberstadt, 2017; Johnson, 2018). Senator Ron Johnson (2018), like Toad, advanced his position against Medicaid expansion by presenting proof to support such a statement. In 2017, Johnson found documentation of 261 individuals charged for abusing the essential benefits offered through Medicaid; 80% of the cases he discovered took place in Medicaid expansion states. Johnson also discovered the number of such cases to have increased by 55% during the four years after the expansion in comparison to the four years prior to it (Johnson, 2018). Johnson also looked further into Medicaid-subsidized opioid-related hospitalization spending. In 2018, he discovered that Medicaid-subsidized hospitalizations caused by opioid use reportedly increased by 53% from the fourth

quarter of 2013 to the fourth quarter of 2015 (Johnson, 2018). Medicaid spending for OUD and emergency overdose treatments also rose 75% more in expansion states than in non-expansion states. He compared these changes with the rates of overdose deaths between 2013 and 2015; overdoses in expansion states occurred at double the rate of overdoses in non-expansion states (Johnson, 2018). Altogether, the data demonstrating increases in Medicaid spending and mortality rates in Medicaid-expanded states, in combination with the numerous cases of fraud and abuse, convinced Johnson that Medicaid expansion had a role in the intensification of the opioid epidemic.

Essentially, Johnson and Toad's argument contends that the healthcare system's susceptibility to abuse, which is sufficiently revealed in the cases of money laundering doctors and pharmaceutical companies in the history of the opioid epidemic, was aggravated by the ACA. Nicholas Eberstadt (2017), likewise, reached the same conclusion in his review titled "Our Miserable 21st Century". He grimly summarized this issue by exclaiming "dependence on government" took on a morbid meaning in the twenty-first century (Eberstadt, 2017).

Medicaid Expanded OUD Treatment

Those who are for Medicaid do not deny the existence of fraud and abuse within Medicaid and the possibility of its role in worsening the opioid epidemic. In a similar fashion, proponents of the Obamacare-Opioid connection do not deny the benefits the expansion of Medicaid had on the population struggling with OUD. Those who supported the expansion of Medicaid strongly advocate its positive impact on the crisis; most notably, its role in increasing the access to MAT (Buck, 2011).

A big step the ACA took towards improving the opioid epidemic was the inclusion of substance abuse and mental health services in the essential benefits package (Buck, 2011). The substance abuse and mental health treatments offered under Medicaid and private insurance were additionally required to cover costs in parity with the out-of-pocket paid under Medicaid. Other supplements to increased MAT access included the creation of health homes, which reflects the ACA's overarching attention to developing a more holistic approach to patient care (Buck, 2011). Recent studies show an increase in prescriptions of Medicaid-endorsed buprenorphine and naloxone for OUD, which is indicative of more OUD patients receiving the proper care needed to combat addiction (Saloner, Levin, Chang, Jones, & Alexander, 2018; Venkataramani & Chatterjee, 2018). Although it is too soon to see if the MAT is effective in the long run of mitigating the opioid epidemic, the people in approval of Medicaid expansion consider the increased quantity of MAT supplied under the expansion a good sign.

Another study found more substantial data indicating the positive effect the ACA has had on the epidemic. Opioid mortality among young adults was demonstrated to have decreased under the ACA. In fact, in Dr. Gal Wettstein's research, 1% more insurance coverage proportionally reduced opioid deaths by 19.8% for young adults (Wettstein, 2019). Whilst it suggests decreased mortality rates for the narrow age group of 19 to 25, Wettstein's study is a mark of the positive impact of the Medicaid expansion on the opioid epidemic (Wettstein, 2019).

Medicaid Expansion and the Opioid Epidemic: Conclusion

A large portion of the debate about the connection between Medicaid expansion and the opioid epidemic comes in the form of comparing data from non-expansion and

expansion states or comparing data from before the Medicaid expansion and after it (Goodman-Bacon & Sandoe, 2017). The leading assertions of the opposing parties, however, are not contradictory to each other; instead, they are emphases on different aspects of the relationship between the Medicaid expansion and the opioid epidemic. Those who believe that the expansion of ACA exacerbated the opioid epidemic stress the pervasive abuse of Medicaid by drug users, dealers, fraudulent healthcare providers, and more (Eberstadt, 2017; Johnson, 2018). To the contrary, people who strongly advocate that Medicaid expansion benefited the opioid epidemic point out the ACA's role in improving the access to OUD treatment and overall quality of healthcare.

Neither party is incorrect in their fundamental assertions; Medicaid expansion has fostered better care for people struggling from opioid addiction and simultaneously has increased the risk of federal funding fraud and abuse (Goodman-Bacon & Sandoe, 2017). Even prior to this current opioid epidemic and the establishment of the ACA, opioids had a record marred with fraud and misconception. It comes as no surprise that Johnson (2018) found fraud and abuse within the workings of Medicaid in light of opioid history. Yet, the ACA's requirement of health insurance for all and its inclusion of MAT such as buprenorphine, methadone, naltrexone, and naloxone opened up access to OUD treatment and reduced opioid overdoses (Saloner et al., 2018; SAMHSA, 2018; Wettstein, 2018). The topic of whether the expansion worsened the opioid epidemic, then, should be addressed more as a question rather than a debate; a question with an answer which weighs the strengths and weakness of Medicaid.

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