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Lessons Learned from the Response to the Human Immunodeficiency Virus Epidemic that Can Inform Addressing the Opioid Epidemic



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KEYWORDS

- HIV • Opioid use disorder • Epidemic • Medication treatment of opioid use disorder
- MOUD • HCV • Infectious disease • Stigma

KEY POINTS

- The opioid epidemic is fueling new infectious disease epidemics, including human immunodeficiency virus (HIV), hepatitis C virus, and serious bacterial infections such as infective endocarditis, across the United States among persons who use drugs.
- There are significant parallels with the early years of the HIV epidemic and the current opioid epidemic that are discussed in this article.
- Evidence-based interventions that were implemented in response to the HIV epidemic can also be used to combat the current opioid epidemic and intertwined infectious disease epidemics in the United States.

INTRODUCTION

When people typically hear the word epidemic these days, they envision influenza, Ebola, or now the novel Coronavirus Infectious Disease of 2019 (COVID-19) caused by SARS-CoV-2. According to Wikipedia, an epidemic is “the rapid spread of an infectious disease to a large number of people in a given population within a short period of time.” Although OUD is not an infectious disease, its “transmission” mimics infectious diseases and it is directly related to a surge in infectious diseases such as human immunodeficiency virus (HIV), hepatitis C virus (HCV), and serious bacterial infections such as infective endocarditis.

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“Access to life-saving interventions must be improved in all settings worldwide” to successfully address epidemics, according to the World Health Organization (WHO).¹ When the HIV epidemic was first recognized in the United States, the response was delayed and stigma and discrimination in society and health care were prominent. In responding to the early HIV epidemic, the US government funded the AIDS (acquired immunodeficiency syndrome) Service Demonstration Grants through the Health Resources and Services Administration (HRSA) in 1986 with \$15.3 million dollars targeting the 4 hardest-hit cities: New York, San Francisco, Los Angeles, and Miami. Subsequent funding intended to help communities respond to the epidemic included the azidothymidine (AZT) reimbursement program in 1987, the pediatric AIDS grants in 1988, and the HRSA low-prevalence planning grants in 1989. On August 18, 1990, with bipartisan support, both houses of Congress passed the Ryan White Comprehensive AIDS Resources Emergency (CARE) Act. At that time, more than 150,000 cases and more than 100,000 deaths had been reported. This unprecedented federal funding allowed states and jurisdictions to integrate efforts necessary to provide access to care and support and, beginning in 1996, to life-saving antiretroviral therapy (ART) for persons living with HIV (PLWH). However, despite the advances in prevention and care that have reduced mortality from HIV/AIDS by more than 80% since it peaked in 1995 and have decreased new infections by 8% since 2010, there are still approximately 38,500 people newly infected each year, and new HIV outbreaks are now occurring across the country among persons who use drugs (PWUD). There seems to be a collective amnesia about this earlier HIV epidemic and the well-documented relationship between heroin use and injection drug use (IDU) along with condomless sexual intercourse that fueled the HIV epidemic then among PWUD. However, the successful skills and evidence-based tools in identifying, treating, and preventing HIV at this time, including what is needed by the WHO to combat an epidemic, access to life-saving medication treatments, is not being used for persons living with OUD. As this article describes, the lessons learned from the HIV epidemic need to be used to overcome this current opioid epidemic and intertwined HIV, HCV, as well as invasive bacterial and fungal infectious disease epidemics in this country.

BACKGROUND

Current State of the Problem

According to the National Institute of Drug Abuse (NIDA), there are currently more than 2.1 million persons with OUD in this country, with only approximately 20% receiving treatment. In October 2017, the President of the United States declared the opioid epidemic a national public health emergency. This epidemic has been manifested by a dramatic increase in the nonmedical use and abuse of prescription opioids, an increase in heroin use,² a large number of opioid overdose deaths,³ and a tripling of emergency department visits because of opioid overdose.⁴ In 2017, more than 47,600 Americans died of opioid overdoses, which was the leading cause of accidental death in the United States, surpassing motor vehicle accidents and gun deaths.⁵ According to the Centers for Disease Control and Prevention (CDC), it is estimated that every day 130 individuals die of overdosing on opioids.^{6,7} In particular the concern is the increase of illicitly manufactured fentanyl used in isolation or with other drugs, such as the stimulants methamphetamine and cocaine, that are causing an alarming number of deaths nationally.^{8,9} Although the latest data released recently have shown a slight decrease of overall national overdose deaths (4.6%) from 2017 to 2018, there are significant variations across the states, with some having marked increases in deaths caused by opioid overdoses and others reporting slight decreases in deaths caused by opioid overdoses.⁷ In particular, a more granular level of

evaluation by the CDC has shown a decrease in prescription opioid overdoses, whereas there was a marked increase in deaths caused by illicitly manufactured fentanyl overdoses, especially in people who used multiple illicit opioids and nonopioids. Illicitly manufactured fentanyl was involved in approximately two-thirds of opioid deaths during January to June 2018, and during this time more than 60% of all opioid deaths nationally co-occurred with at least 1 common nonopioid drug such as methamphetamine, cocaine, or benzodiazepines.⁷

In addition to the direct deaths caused by opioids and other drugs occurring at unprecedented levels, the opioid epidemic has resulted in an increase in infections among PWUD,^{10–15} magnifying the morbidity and mortality associated with illicit opioid and other substance use. Such infections that are increasing related to illicit opioid and other drug use include HCV; hepatitis B virus; HIV; and invasive bacterial and fungal infections, including *Staphylococcus aureus* bacteremia, endocarditis, skin and soft tissue infections, and bone and joint infections.^{10,13,16–18} Fentanyl or heroin combined with stimulants such as cocaine and methamphetamine have led to new HIV outbreaks among PWUD throughout the country^{13–15} as well as increased overdose deaths.¹⁹ Further, opioid addiction impedes patients from staying adherent to effective treatments when they are provided and thus leads to readmissions as well as death caused by persistent or untreated infections.

This population with co-occurring IDU-related infections represents the most severely ill patients with OUD, and an important opportunity to intervene, both to improve patients' outcomes and to reduce the public health risk of infectious disease transmission. Further, OUD affects everyone: people from urban, suburban, and rural communities alike; persons at all income levels; all racial and ethnic minorities; all age groups, with younger persons being affected substantially; and persons with mental illness.²⁰ Infectious disease physicians as well as other physicians and nonphysician clinicians are at the forefront of these coalescing epidemics. Infectious disease clinicians are most likely to have learned lessons from the original HIV epidemic to help to defeat the opioid epidemic.

The Human Immunodeficiency Virus Epidemic in 1980s to 1990s in the United States

In the early 1980s and 1990s, the United States was experiencing one of the worst epidemics in the country's history, the HIV epidemic. Initially identified among young men who had sex with men, it was quickly recognized among heterosexual men and women, children, and persons who injected or used drugs.²¹ The early HIV epidemic associated with IDU was related to injection of heroin and cocaine and affected persons predominantly living in urban centers and afflicting mainly African American and Hispanic men and women.^{22,23} In the beginning of the epidemic, even after HIV was identified as the cause of AIDS, medication development was slow, and the medications were expensive and difficult to access. It was not until the mid-1990s that effective combination ART was identified with the discovery of the class of ART called protease inhibitors, which, when used in combination with nucleoside reverse transcriptase inhibitors, reduced deaths among PLWH. Issues originally confronting PLWH in terms of access to these lifesaving ART regimens included lack of insurance and/or lack of access to the expensive medications; high levels of stigma,²⁴ not only in the community but among providers, including infectious disease physicians who were at the forefront of the epidemic; and, in general, a lack of provider workforce or willingness to treat PLWH.²⁵

More persons have now died of the opioid epidemic than have died at the height of the AIDS epidemic in the United States.²⁶ The current opioid epidemic began in

the late 1990s, associated with addiction to prescription opioids prescribed by clinicians for treatment of pain disorders. In 2015, a new HIV and HCV outbreak occurred in Scott County, Indiana, specifically linked with prescription opioid misuse in the United States.¹³ This HIV and HCV epidemic was identified through the CDC to be linked directly to both sharing contaminated IDU works when injecting oxycodone (Opana) as well as through condomless sexual intercourse.²⁷

Over time, there was a change from addiction to prescription opioids to a new heroin epidemic across the country, which was predominantly found to involve the rapidly available and less expensive black tar heroin coming from Mexico,²⁸ which in turn led to another spike in overdose deaths and associated with more HCV and HIV outbreaks nationally. It is important to remember that the early HIV epidemic was associated with white heroin from Asia, which had low supply levels in the United States back then and was predominantly affecting urban African Americans.²⁸ Very little public outcry was heard and, in response, there was a war on drugs that led to the country's mass incarceration of predominantly PWUD, who were predominantly young African American men. In comparison, the current opioid epidemic is affecting urban and rural communities among mainly young white men and women. Later, the opioid epidemic worsened again with the availability of the less expensive illicitly manufactured fentanyl, and this epidemic has been plaguing the country in isolation as well as now more routinely associated with an increasing stimulant epidemic involving widespread use of methamphetamine, which is causing even more overdose deaths and more infectious disease outbreaks without any evidence of abating.^{9,29} The reason the United States did not have a rapidly expanding opioid epidemic in the 1970s and 1980s was predominantly that there was a lack of widespread opioid supply, but, with the rapidly expanding prescription opioid epidemic, the supply increased dramatically in the late 1990s, leading to rapid opioid addiction by persons affected by OUD that was easily fulfilled by the less expensive and easily available black tar heroin that was supplied through Mexico and now the illicitly manufactured fentanyl.^{28,30}

Although it is not surprising, it is still heart breaking for clinicians who cared then and care now for people with HIV (PWH) to see more HIV outbreaks occurring in the United States among PWUD related to these newer opioid epidemics over the past 10 years given that it was known then that sharing contaminated IDU equipment and condomless sexual intercourse drove the HIV epidemic in this country and globally.^{22,23,31,32} What is surprising is that, unlike the early HIV epidemic, where there were very few medications to treat HIV early on, for more than 50 years there have been effective medications to treat OUD, including methadone, followed later by buprenorphine, and then extended-release naltrexone. All of these US Food and Drug Administration (FDA)-approved medications have extensive evidence to show that they reduce opioid use, craving, overdose, and HIV and HCV transmission.³³ What is clear is that persons with OUD are not receiving these medications. Further, as was identified at the height of the AIDS epidemic in the United States, harm reduction services such as clean needle syringe exchange programs markedly reduced HIV transmission in PWUD,^{34,35} but few programs exist in the United States and, as yet, federal dollars are not provided to purchase syringes. In February 2019, the President of the United States called for a plan to end HIV in the United States, with specific goals to reduce new HIV infections by 75% by 2025 and by 90% by 2030.³⁶ If these goals are to be achieved, effectively addressing the opioid epidemic is urgently needed: an all-hands-on-deck approach is required.

What Helped in the Human Immunodeficiency Virus Epidemic?

There were several things that happened to effectively begin to address the HIV epidemic early on, but the most impactful event was when Congress passed the CARE Act on August 18, 1990.³⁷ This program allowed specific funding by the federal government to cities, counties, states, and local community-based programs to offer a comprehensive system of HIV primary care, case-management support services, housing assistance, substance use disorder (SUD) treatment, psychosocial behavioral health, wraparound services, and ART.³⁸

The CARE Act continues to be critically important in supporting services for the uninsured and underinsured, especially in non-Medicaid expansion states.³⁷ Importantly, the CARE Act also demanded that acceptance of funding by state programs required that they in turn had to report success metrics to and abide by the provision of ART and the wraparound services. This funding mechanism was instrumental in increasing the workforce because funded programs had to train and hire health care providers to treat PWH. The federal government also funded the AIDS Training and Education Centers (AETCs) beginning in 1987 with the mission of providing health care providers with education on HIV and comorbidities. The AETCs in 1997 became part of the CARE Act. As a result of addressing HIV from diagnosis to viral suppression, the HIV care continuum has been defined with specific outcomes including diagnosis of HIV; linkage to care; ART prescription; ART retention; and, most importantly and the goal of ART treatment, HIV viral suppression.³⁹ In particular, it is well known that HIV viral suppression not only reduces morbidity and mortality related to HIV-related and non-HIV-related diseases but also reduces HIV transmission to the uninfected.⁴⁰ Thus, overall, this evaluation process of the metrics used in the continuum of care provided usable data that supported PWH and improved individual and public health, and essentially upended the increasing HIV epidemic in this country. Programs that received Ryan White funding improved viral suppression rates among PWH from 69.5% to 85.9% from 2010 to 2017 and predominantly among racial/ethnic minorities,⁴¹ and there was a reduction in new HIV infections of 8% from 2010 to 2018, from 41,000 to 37,832.⁴² This reduction was caused not only by widespread HIV care through CARE Act-funded programs but also through advances in science, including preexposure prophylaxis to persons at risk for acquiring HIV,⁴³ the Patient Protection and Affordable Care Act (ACA), the AIDS Drug Assistance Program, and significant research funded by the National Institutes of Health (NIH) and CDC. The requirements of providing services to treat HIV and providing funding for medications to treat HIV with wraparound services such as mental health treatment and SUD treatment have thus led to a reduction in morbidity and mortality from HIV as well as a reduction in new HIV infections in the United States.

In addition to these actions, as well as the CDC's recommendations for universal HIV screening and linkage to care in the United States,⁴⁴ specific efforts by The Substance Abuse and Mental Health Services Administration and activism in the community to help programs reduce, but not eliminate, stigma in the general community and among the medical community also helped increase the identification of PWH and provide them immediate care in nonstigmatized environments.^{45,46} Stigma was also reduced in this population for explicitly understanding and colocating HIV care along with mental health, SUD care, and case-management services. Further, the harm reduction efforts in particular were highly helpful in transmission of HIV among PWUD through the support of syringe service programs nationally and globally. Education of medical students and other health care students also helped expand HIV care and reduce stigma.⁴⁷

Similarities of the Human Immunodeficiency Virus Epidemic to the Opioid Epidemic

The opioid epidemic parallels the early HIV epidemic in the United States, and clinicians have the tools to combat the epidemic and have had them for some time, but the issue is that they are not being used. Just like HIV disease, persons affected by SUDs and OUD specifically experience high levels of stigma such that it impedes their ability to ask for and receive care. The negative stigma from clinicians is as severe as it was from providers at the height of the AIDS epidemic and, in part, is caused by inadequate training of the clinical workforce on OUD being seen as a character flaw rather than a medical disorder. However, many clinicians view OUD and other SUDs as bad choices by the individual rather than what it is: a medical disorder that is responsive to effective evidence-based treatment.

Further, routine OUD screening and SUD screening in general is not offered universally, much like early in the HIV epidemic.⁴⁸ However, there are available screening tools for evaluation of OUD, including the Rapid Opioid dependency Screen (RODS)⁴⁹ and others.^{50,51} Similar to universal HIV screening services that helped identify and link PLWH to treatment providers, universal OUD screening could be offered to all persons, and those with positive OUD screens could be linked to medication treatment of OUD (MOUD).

However, few persons with OUD are linked to OUD or SUD treatment and, if they are, few providers are approved to prescribe evidence-based FDA-approved MOUD.³³ The 3 FDA-approved MOUDs (methadone, buprenorphine, and extended-release naltrexone [XR-NTX]) are successful in treating OUD through reduction in opioid craving, relapse, and overdose, and they reduce transmission of HIV and HCV^{33,52}; buprenorphine and XR-NTX also improve HIV viral suppression in PLWH,^{53–55} the gold standard of care in treatment of HIV, which is associated with reduced mortality and reduced transmission^{40,54,55} (known as undetectable = untransmittable). In the early years of the HIV epidemic, there was no effective ART, whereas, in the OUD epidemic, there is effective therapy but few are accessing it. The reasons include lack of insurance provisions in non-Medicaid expansion states for SUD treatment; prior authorization requirements to prescribe buprenorphine, or making it mandatory to provide behavioral treatment in order to receive MOUD; Drug Addiction Treatment Act (DATA) 2000 X-waiver mandatory training, which has been identified as burdensome and inadequate as well as placing limitations on the number of persons who can be prescribed buprenorphine; lack of same-day billing for an OUD treatment and other potential associated medical conditions that might require patients to come back another time and expose them to on-going opioid use and thus increased risk of overdose death or acquisition of infectious diseases; inadequate training of medical professionals and lack of providers to take on treatment; lack of harm reduction expansion services or of federal funding for syringes; and stigma in the general community and across the medical community.^{48,56,57}

DISCUSSION

What Can Be Done?

The scrutiny of the parallel of the HIV and the OUD epidemics is helpful because it identifies similar barriers to treatment and how to quell the coalescing substance use and infectious disease epidemics. A recent National Academy of Sciences, Engineering, and Medicine (NAEM) committee has released recommendations identifying these barriers after conducting interviews of programs across the country that

were integrating infectious disease and OUD prevention and treatment services.^{48,58} In addition, the Infectious Disease Society of America (IDSA) and HIV Medicine Association (HIVMA) working groups also identified similar barriers and made recommendations to directly end both the opioid and associated HIV and other infectious disease epidemics.⁵⁹ Such parallels of the opioid epidemic to the early HIV epidemic have led agencies and experts with expertise in HIV and the OUD to call for specific known recommendations to end not only the opioid epidemic but also new illicit substance epidemics, as well as to prevent new HIV and other infectious disease epidemics from occurring in this country, as identified earlier.

In order to end the opioid epidemic, history must be remembered and the lessons learned in combatting the HIV epidemic then applied to combatting the opioid epidemic now. All hands on deck are needed, and now!

SUMMARY

In order to effectively address the opioid epidemic, several important actions are urgently needed:

1. Increasing access to MOUD (buprenorphine, methadone, and extended-release naltrexone) is urgently needed to treat persons with OUD, which means that federal and local government agencies should provide funding to access these medications through Medicaid or local state government, similar to how the CARE Act provided funding for ART for PLWH.
2. Expanding training and education of all health care professionals from students through practicing providers in all disciplines (physicians of all disciplines, nurses, physician assistants, dentist, pharmacists, midwives) regarding how to screen, diagnose, and treat OUD and other SUDs is needed.
3. Removal of federal and local barriers to accessing treatment of OUD, including removal of the DATA 2000 X-waiver mandatory training to provide buprenorphine and removal of limitations of numbers of persons with OUD who can be treated by a provider, are needed to combat the opioid epidemic.
4. Removal of prior authorizations that are burdensome to doctors and also impede the ability to provide in-the-moment appropriate life-saving medication treatment of OUD when a patient requests it is needed.
5. Successful directed stigma reduction regarding persons living with OUDs and substance use in general is required to combat the opioid epidemic, and this involves all persons, including providers, administrators, the community, the media, and patients.
6. Accessible widespread harm reduction services are needed to combat the dueling opioid and HIV epidemics, especially in light of the polysubstance epidemics that include an increase in methamphetamine use, that does not have effective medications to treat it. Thus, services must expand to provide clean syringes, fentanyl testing, and naloxone distribution. Further, federal dollars should be released to states to fund provision of the syringes, fentanyl test strips, and naloxone, along with the staff to provide them.

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