

# Federal and State Action Needed to End the Infectious Complications of Illicit Drug Use in the United States: IDSA and HIVMA's Advocacy Agenda

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In response to the opioid crisis, IDSA and HIVMA established a working group to drive an evidence- and human rights-based response to illicit drug use and associated infectious diseases. Infectious diseases and HIV physicians have an opportunity to intervene, addressing both conditions. IDSA and HIVMA have developed a policy agenda highlighting evidence-based practices that need further dissemination. This paper reviews (1) programs most relevant to infectious diseases in the 2018 SUPPORT Act; (2) opportunities offered by the "End the HIV Epidemic" initiative; and (3) policy changes necessary to affect the trajectory of the opioid epidemic and associated infections. Issues addressed include leveraging harm reduction tools and improving integrated prevention and treatment services for the infectious diseases and substance use disorder care continuum. By strengthening collaborations between infectious diseases and addiction specialists, including increasing training in substance use disorder treatment among infectious diseases and addiction specialists, we can decrease morbidity and mortality associated with these overlapping epidemics.

**Keywords.** injection drug use; opioid epidemic; medications for treatment of opioid use disorder.

## WHY THE OPIOID EPIDEMIC MATTERS TO INFECTIOUS DISEASES /HIV CLINICIANS

The epidemiology of the US opioid epidemic continues to evolve and presents new challenges. In recent years, the epidemic has shifted from prescription opioid pills to injection of illicitly produced opioids, including heroin and fentanyl, with concomitant increasing injection of stimulants including cocaine and methamphetamine [1–3]. As a result, the incidence of injection drug use (IDU)-related infections such as human immunodeficiency virus (HIV), hepatitis C virus (HCV), hepatitis B virus (HBV), and invasive bacterial and fungal infections, including *Staphylococcus aureus* bacteremia, endocarditis, and skin and soft tissue infections, is rising [2, 4–11]. Injection of fentanyl or heroin alone and in combination with stimulants have led to new HIV outbreaks among people who use drugs throughout the country [4,

10–12]. In addition to HIV, both acute HCV and HBV infection incidence has mirrored the rise in injection opioids [5, 13] and hospitalizations for injection opioid-related endocarditis have increased more than 12-fold in recent years [6, 8].

At the State of the Union Address in February 2019, President Trump called for a plan to end HIV as an epidemic in the United States. This plan seeks to reduce new infections by 75% in the next 5 years and by 90% in the next 10 years. Even amid the opioid epidemic, such ambitious goals can be achieved if policy changes occur and adequate resources are provided. Thus, more than ever, addressing the HIV epidemic as well as HCV and other IDU-related infections also requires a focus on the opioid and co-occurring stimulant epidemics. Doing so will improve patients' outcomes and reduce the public health risk of infectious disease transmission. Nevertheless, a number of barriers to care in people who use drugs need to be addressed to end the opioid and HIV epidemics in the United States as well as reduce the other infectious disease health outcomes. To address these barriers we recommend expanding Medicaid, expanding access to harm reduction services, improving treatment and surveillance to enhance the continuum of care, and treating opioid and other substance use disorders (SUD), including through low-barrier hospital and community-based treatment, as well as in the criminal justice setting.

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The authors of this paper are members of a working group created by the Infectious Diseases Society of America (IDSA) and the HIV Medicine Association (HIVMA) in 2017 to enhance their efforts to educate and advocate on the urgent need to better prevent and treat serious infections linked to the opioid and stimulant epidemics and underlying SUD. The working group developed a policy agenda reflecting issues raised by infectious diseases and HIV physicians and health care professionals working at the intersection of infectious diseases and opioid use disorder (OUD) and other SUD epidemics more broadly. In this paper, we outline practice and policy suggestions that are likely to positively impact the OUD, stimulant epidemics, and infectious diseases epidemics, and that have been reviewed and approved by the IDSA and HIVMA Board of Directors as a call to action for infectious diseases and HIV practitioners.

### **WHAT DOES TREATMENT FOR OUD ENTAIL AND WHY DOES IT MATTER TO INFECTIOUS DISEASES CLINICIANS?**

Medications for treatment of opioid use disorder (MOUDs, which is now the preferred term to medication-assisted therapy) are recognized as the most effective treatments for OUD [14]. There are 3 Food and Drug Administration-approved MOUDs—methadone, buprenorphine, and extended-release naltrexone (XR-NTX). Methadone is a full opioid agonist and buprenorphine is a partial opioid agonist, while XR-NTX is an opioid antagonist. All are successful in treating OUD and in decreasing mortality. All reduce illicit opioid use, opioid craving, overdose, and HIV and HCV transmission [14, 15]; and buprenorphine and XR-NTX also improve HIV viral suppression in people living with HIV, the gold standard of care in treatment of HIV that is associated with reduced mortality and reduced transmission [16, 17]. Of the 3 MOUDs, access to methadone and buprenorphine are limited by regulations. Prescribing requires special training outside postgraduate programs and either a waiver from the Drug Enforcement Agency in the case of buprenorphine or treatment in a federally certified opioid treatment program in the case of methadone. Unfortunately, many clinical settings lack physicians trained in OUD treatment. Only about 5% of the nation's physicians have waivers to prescribe buprenorphine and most substance use treatment programs do not have opioid treatment programs, which makes methadone treatment challenging to obtain [18]. Therefore, the prevailing care for these patients typically consists of withdrawal management or detoxification and referral to outpatient resources for follow-up treatment. This asks patients with severe OUD to tolerate withdrawal symptoms, risking premature exit from hospital, and relapse to opioid use after failure to connect with OUD treatment referrals. Such inadequate care results

in prolonged hospitalizations due to concern about relapse and nonadherence if patients leave the hospital, readmissions after OUD relapse, and, if concomitant infection is present, lack of antibiotic adherence and reinfection. Ultimately, this cycle leads to poor clinical outcomes, high health care costs, and excess deaths. Infectious disease specialists are at the frontlines in many hospitals treating infectious diseases in people who use drugs and have an opportunity to screen and treat co-occurring SUDs.

### **RECENT FEDERAL POLICY ACTION: THE 2018 SUPPORT ACT**

In 2018, Congress passed legislation offering opportunities to heighten the response to the opioid epidemic and its infectious diseases complications. On 24 October 2018, President Trump signed into law the Substance Use Disorder Prevention that Promotes Opioid Recovery and Treatment (SUPPORT Act). This bill includes a range of prevention, care, workforce, and public health provisions to strengthen the response to the opioid epidemic (Table 1) [19]. The bill was passed with strong bipartisan support from congressional members recognizing that the status quo was woefully inadequate to respond to the opioid epidemic.

IDSA and HIVMA supported the SUPPORT Act, including provisions that improved Medicaid and Medicare coverage of SUD treatment and services, and that increased the patient cap for which physicians could prescribe MOUD. Priority issues for IDSA and HIVMA were provisions authorizing funding for the Centers for Disease Control and Prevention (CDC) to eliminate opioid related infections through improved surveillance and prevention for infections linked to IDU and funding for the Health Resources and Services Administration to build workforce capacity through a new Substance Use Treatment Provider Loan Forgiveness Program, offering up to \$250 000 in loan repayment over 6 years for providers working in substance use treatment facilities [20]. Both programs depend on Congress to appropriate funding. Five million dollars was appropriated for fiscal year 2019 for the CDC Eliminate Opioid Related Infections funding provision. The fiscal year 2020 appropriations bills were signed into law on December 20, 2019 and included \$10 million for the CDC's Eliminate Opioid Related Infections program and \$12 million for the new substance use disorder loan forgiveness program [21].

Other legislative proposals supported by IDSA and HIVMA that have been introduced in the 116th Congress include: the Medicaid Re-entry Act that would allow Medicaid coverage for inmates during the 30-day period preceding release from a public institution [22]; the Comprehensive Addiction Resources Emergency Act modeled after the highly successful Ryan White HIV/AIDS Program and that would provide funding to states to support comprehensive prevention, care, and treatment programs [23]; and the Mainstreaming Addiction Treatment

**Table 1. Summary of Federal Policy Recommendations**

1. Increase federal funding for SSPs and allow funds to be used to purchase sterile syringes in addition to other services.
2. Incentivize states to give more authority to local governments to establish SSPs and to eliminate barriers to sterile syringes, such as one-for-one needle exchange requirements.
3. Allow jurisdictions that have approved overdose prevention sites or supervised injection facilities to implement and evaluate the intervention in the United States.
4. Urge all states to expand Medicaid.
5. Fund demonstration projects and pilot studies to identify effective care models for comanagement of infectious diseases and SUD.
6. Increase funding for national and regional warmlines and peer-to-peer mentoring, programs for prescribers of MOUDs, and for cotreatment of related infections.
7. Eliminate the buprenorphine waiver, remove patient caps, and offer grant funding for case management and other support services to clinics and practices that prescribe MOUDs.
8. Increase funding and reimbursement for telehealth and other low-barrier access care delivery models.
9. Support implementation of universal HCV testing.
10. Develop a national surveillance system to report and track IDU-related infections to predict and respond to emerging epidemics.
11. Integrate MOUD and counseling services during incarceration.
12. Integrate screening for OUD and treatment with MOUD into jails and prisons.
13. Expand access to harm reduction during and after incarceration.
14. Allow states to initiate Medicaid coverage 30 days prior to release from criminal justice settings to facilitate care initiation and coordination during the transition to the community.
15. Fund research to evaluate non-HIV/ HCV related infections secondary to OUD/ SUD such as skin and soft tissue infections and risk of endocarditis with a specific focus on criminal justice involved populations.

Abbreviations: HCV, hepatitis C virus; HIV, human immunodeficiency virus; IDU, injection drug use; MOUD, medication for treatment of opioid use disorder; OUD, opioid use disorder; SSPs, syringe services program; SUD, substance use disorder.

Act that would eliminate the requirement for clinicians to obtain a waiver to prescribe buprenorphine [24]. As outlined in this paper, urgent policy action is needed to reduce illness and death due to our nation's substance use epidemics.

## **POLICY RECOMMENDATIONS FOR DRIVING RAPID CHANGES TO REDUCE ILLNESS AND DEATH**

### **Expanding Community-Based Harm Reduction Programs and Services**

In addition to state and jurisdictional bans or restrictions on syringe services programs (SSP), funding remains a significant barrier to expanding access to SSP services [25]. Increased state and federal funding are needed to expand SSP and other harm reduction services, including access to MOUD and infectious diseases treatment services in order to decrease HCV, HIV, IDU-related infections, and vaccine-preventable diseases, and improve OUD-related outcomes [26, 27]. Studies have demonstrated that incorporation of SSPs combined with MOUD is associated with a decrease in HCV and HIV acquisition risk by 76% and 34%, respectively [28]. SSPs also can facilitate vaccine uptake for hepatitis A virus (HAV), HBV, influenza, and invasive pneumococcal disease, which disproportionately impact people who inject drugs or experience unstable housing or homelessness [29, 30]. SSPs can offer a safe space without stigma for individuals with SUDs to also receive counseling regarding safe sexual practice, safe injection practice, and provision of HIV preexposure prophylaxis (PrEP) and contraception. SSPs that also provide treatment for OUD can facilitate linkage to care for effective evidence-based treatments [31]. Furthermore, persons with SUDs may be reluctant to seek nonemergent care for skin and soft tissue infections and postpone medical evaluation until

the need is more urgent. Providing care for skin and soft tissue infections in a supported setting may reduce progression to serious infections and reduce complications like wound botulism or partial drainage of abscesses.

Given the increased incidence of IDU-associated infections and overdose deaths [1, 2], there is a need to provide ongoing support for and increased access to SSPs. The HIV outbreak in Scott County, Indiana, in addition to other emerging HBV and HCV epidemics, has highlighted the need to expand SSPs, particularly in nonurban areas [32]. Although federal funds to support SSPs was an important step, additional federal funding and flexibility are needed to fully cover services and costs associated with these programs, including purchasing of sterile syringes and to support delivery of MOUD at SSPs [33]. In jurisdictions where SSPs are prohibited or sparse, cities and states should be incentivized to modify their laws and to encourage uptake by local jurisdictions. In some states, there is a limit on the number or location of such programs, or SSPs may only be allowed during certain circumstances (ie, public health emergencies) [34]. Such limitations should be eliminated given the documented need for these programs and their potential to reduce infectious diseases [34, 35]. Additionally, drug paraphernalia laws, which prohibit possession of syringes, pose barriers to SSP expansion and effectiveness [36]. State and local governments should be encouraged to employ innovative programming, including mobile delivery and contracting with community-based organizations. Additionally, states should be incentivized to eliminate 1-for-1 syringe exchange (ie, exchanging 1 used syringe for 1 sterile syringe) because they create barriers to individuals who inject drugs having an adequate supply of sterile

syringes. Secondary exchange, or the distribution of sterile syringes from 1 person to a social network, is often necessary due to distance and transportation barriers.

In addition to SSPs, other harm reduction services are needed to address the expanding epidemics. Overdose prevention sites (also known as supervised injection facilities or safe injection sites) are facilities in which persons can inject drugs in a safe, clean environment under medical supervision. Overdose prevention sites enable rapid, life-saving intervention in the case of drug overdose and can also provide injection equipment and referrals to care for SUD and other health care services. Overdose prevention sites have existed for many years in Europe, Australia, and Canada. Studies of overdose prevention sites in Vancouver and Sydney have found an increase in withdrawal management or detoxification service referrals and a decrease in drug overdose rates, syringe sharing, public injections, and publicly discarded syringes [37–39]. Several US municipalities have advocated for overdose prevention sites, but political opposition has so far impeded implementation. A recent modeling study in Seattle estimated that an overdose prevention site would yield cost savings through prevention of overdose deaths, enrollment in MOUDs, prevention of emergency medical services deployments, and emergency department visits and hospitalizations [40]. Although concerns have been raised about violation of federal and state drug laws, overdose prevention sites have been legally established successfully in areas outside of the United States. Review of the processes and experience could facilitate implementation in US jurisdictions that have approved overdose prevention sites. Jurisdictions that have approved overdose prevention sites should be allowed to implement and evaluate the intervention in the United States.

### Improving the Care Continuum for Individuals With Infectious Diseases and Substance Use Disorders

Significant work needs to be done to improve the care continuum for people with infectious diseases and co-occurring SUD. The first step needs to be ensuring that everyone has access to health care. Federal support for the Medicaid expansion must continue and the 14 states that have not expanded Medicaid should be incentivized to do so [19]. Recent studies

have shown that expansion of health care services, mostly via Medicaid expansion, increased utilization of MOUD [3, 41, 42]. Expanding access to health coverage is necessary to prevent and treat the infection, underlying SUD, and improve overall mortality and quality of life as evidenced by studies finding an association between enrollment in an Affordable Care Act Qualified Health Plan and improved outcomes for people with HIV [43].

As a next step, treatment programs that integrate substance use care and treatment for infectious complications in order to improve outcomes are needed. Treatment of both the SUD and associated infections (eg, HIV, HCV) can be cost-effective and is associated with improved infection and SUD outcomes [44]. Previous studies have shown that patients with either HIV or HCV who receive MOUDs have improved viral suppression (HIV) [16, 17], achieve sustained virologic response/cure (HCV) [45, 46], and have increased retention in care [47]. However, significant gaps remain in understanding the role substance use treatment plays in caring for people with other IDU-related infections, such as endocarditis, deep tissue abscesses, skin and soft tissue infections, and bone and joint infections. One innovative care model combined outpatient parenteral therapy with buprenorphine treatment and showed similar clinical and drug use outcomes to completing inpatient therapy and resulted in reduced hospital length of stay by 24 days [48]. Studies are needed to evaluate novel approaches to antimicrobial treatment for IDU-associated infections such as the role of long-acting glycopeptides. Increased funding is necessary for other demonstration projects and pilot studies to identify effective care models for comanagement of infectious diseases and OUD as well as other SUDs.

Additionally, we need to expand the network of providers prescribing MOUD. Most infectious diseases and HIV physicians receive little to no formal training in the management of OUD and other SUDs. Training to identify and treat OUD and other SUDs should be increased in medical schools, nursing schools, physician assistant schools, residency programs, and within hospitals. While all infectious diseases and HIV physicians should become familiar with harm reduction principles and be able to counsel patients regarding safe injection practices, we need broader national support for physicians

**Table 2. Clinical Tools and Resources for Infectious Disease and HIV Clinicians**

Buprenorphine practitioner locator	<a href="https://www.samhsa.gov/medication-assisted-treatment/practitioner-program-data/treatment-practitioner-locator">https://www.samhsa.gov/medication-assisted-treatment/practitioner-program-data/treatment-practitioner-locator</a>
Buprenorphine waiver and training resources	<a href="https://www.samhsa.gov/medication-assisted-treatment/training-materials-resources/apply-for-practitioner-waiver">https://www.samhsa.gov/medication-assisted-treatment/training-materials-resources/apply-for-practitioner-waiver</a>
Behavioral health treatment services locator	<a href="https://findtreatment.samhsa.gov/">https://findtreatment.samhsa.gov/</a>
Clinical consultation center—substance use management warmline	Monday to Friday, 9 am to 8 pm ET (855) 300–3595 <a href="http://nccc.ucsf.edu/clinician-consultation/substance-use-management/">http://nccc.ucsf.edu/clinician-consultation/substance-use-management/</a>
Providers clinical support system	<a href="https://pcssnow.org">https://pcssnow.org</a>
State-targeted response technical assistance consortium	<a href="https://opioidresponsenetwork.org/">https://opioidresponsenetwork.org/</a>
Support for hospital opioid use disorder treatment	<a href="https://www.projectsout.org">https://www.projectsout.org</a>



to comanage OUD, SUDs, and co-occurring infectious diseases. Lack of confidence has been identified as a major barrier preventing some physicians from integrating buprenorphine into their practice for the treatment of OUD [49]. Warmlines, such as the one run by the Clinical Consultation Center at the University of California San Francisco, and videoconferencing-based learning communities such as Project ECHO, are excellent resources to provide support on a number of clinical aspects of disease management (Table 2) [44]. Increasing funding for national and regional warmlines, telehealth-based learning communities, peer-to-peer mentoring programs, and other technical assistance programs such as the Opioid Response Network will help decrease barriers to providing substance use treatment. The Opioid Response Network is a network of experienced clinicians that is funded by the Substance Abuse Mental Health and Services Administration to provide technical assistance to improve access to substance use treatment.

In addition, a reorganization of the buprenorphine prescribing system is needed. In order to increase the number of providers who prescribe MOUD and improve patient access, we recommend eliminating the buprenorphine waiver requirement, removing the patient caps, and dedicating grant funding for case management and other support services to clinics that prescribe MOUDs. Increased funding and reimbursement are also needed for low-barrier care delivery models such as telehealth. These innovative programs, which have already begun to be tested in infectious diseases/OUD comanagement [50], have the potential to increase medication uptake and improve outcomes by increasing access to treatment where people reside. In addition, multidisciplinary team meetings, including surgeons, SUD specialists, inpatient internal medicine clinicians, nurses, social work, and case management, are being piloted in several hospitals across the country in order to make informed and collaborative decisions on complex patients, such as those with recurrent endocarditis following valve repair. Evaluation of the impact of these types of collaborative efforts, both on patient outcomes and workplace satisfaction, can help inform best practice for all hospitals.

We also need to address the requirements of particularly high-risk patients, including pregnant women and infants born to mothers with OUD, and persons experiencing homelessness who may be unable to access traditional care. OUD among pregnant women has increased significantly and there is an urgent need to build capacity to manage OUD among pregnant women [51]. Infants born to mothers with OUD during pregnancy are at increased risk for HIV, HBV, and HCV. Screening for HIV, HBV, and HCV is recommended for all pregnant women [52] and has been successfully integrated into most prenatal screening paradigms, allowing for perinatal management that decreases the risk of infant infection. In September 2006, the CDC recommended screening all sexually active persons 13–65 years old for HIV at least once, but this has not occurred and needs emphasis in order

to end the epidemic. In August 2019, the US Preventive Services Task Force issued a draft recommendation for universal HCV screening [53]. Given that overall incidence of HCV is increasing alongside the opioid epidemic [54], strategies including provider education and increased resources are needed to ensure universal HCV testing is performed, particularly among women of child-bearing age and in prenatal care to prevent infant infection [55–57].

Persons experiencing homelessness and unstable housing are similarly at increased risk for infections associated with SUD. This is, in part, due to the high prevalence of concomitant untreated mental illness and SUD among these individuals and sanitation issues [58, 59]. It is also due to our inability to implement effective management strategies for SUD and infections in this vulnerable population. In addition to ensuring persons who experience homelessness receive treatment of their infectious diseases and SUD through low-barrier and street-based medicine programs, expanding access to stable housing would also improve short- and long-term outcomes and should be part of a comprehensive strategy [60, 61].

Finally, to monitor progress of these interventions, we need a standardized mechanism for reporting IDU-related infections. Other than for HIV and, in some states, for HCV infection, there is no national database of IDU-related infections for surveillance, prevention activities, and program evaluation. This makes it difficult—if not impossible—to identify, predict, and prevent new infectious disease epidemics related to substance use in the United States. In addition, the majority of federal funding has been directed towards opioid overdose treatment and HIV resultant from IDU, but not toward the bacterial and fungal infection complications, partly due to lack of integrated surveillance systems for serious IDU-related infections, such as endocarditis. Developing national surveillance systems to track and predict new epidemics before they happen and increasing National Institutes of Health funding for research into other infectious diseases related to the worsening SUD epidemics in this country are urgently needed.

#### **Addressing Substance Use Disorders in Criminal Justice-Involved Individuals**

Over half of the criminal justice-involved population (CJIP) have OUD or SUD, with a 10-fold higher prevalence than found in the general adult population [62]. As such, employing and enforcing evidence-based treatment guidelines that address the overlap of SUD and infectious diseases in the criminal justice system has the potential to improve morbidity and mortality substantially. Key components include evaluating new entrants for SUD and IDU-related infections, integrating MOUD and counseling services during incarceration, providing both appropriate medical care during incarceration and harm reduction during and after incarceration, care coordination, seamless

referral to outpatient care for SUD and chronic infections, and uninterrupted insurance coverage for CJIP.

Intertwined with national increases in SUD and incarceration rates, there have been substantial increases in HIV and HCV in CJIP, as well as outbreaks of HAV and HBV [63, 64]. Inequities that exist in health care access in the community are amplified by criminal justice involvement, leading to premature deaths [65]. Mortality rates are high following release, primarily driven by untreated OUD leading to fatal overdose, progression of HIV, and HBV/HCV-induced liver disease [66–68]. Additionally, overall infectious disease testing rates and rates of vaccination against HAV and HBV are low [69, 70]. Integration of infectious disease management with treatment for OUD in CJIP is an endorsed strategy for reducing these health inequities that will likely lead to improved infectious disease outcomes and facilitates linkage to care postrelease [16, 17, 71]. Despite the evidence, however, few incarcerated settings offer MOUD. SUD screening in jails and prisons with linkage to substance use treatment also decreases postrelease mortality [72, 73] and increases postrelease HIV viral suppression [16, 17]. Clearly, prevention and treatment for OUD and associated infections in this population can improve both individual outcomes and public health, especially when initiated during incarceration. Time spent in prison or jail provides a reachable moment—an opportunity to engage a vulnerable population. Screening for OUD and treatment with MOUD need to be integrated into jails and prisons to improve substance use and infectious diseases outcomes.

In addition to testing and treatment, access to harm reduction tools to prevent infection needs to be prioritized in the CJIP. Harm reduction tools like condoms and clean needles are not routinely available in prisons or jails despite several research studies demonstrating the need for such tools, and the consequences of not providing them [74, 75]. Increasing awareness and availability of PrEP in jails and prisons—continued from the community, initiating while detained, or initiated before release—need to be urgently deployed, especially in communities deemed to be at high risk of HIV outbreak [76]. As evidenced by previous successful implementation of intensified harm reduction, expansion can be implemented in jails, effectively containing outbreaks [77].

Substance use treatment coupled with uninterrupted health insurance is needed to improve outcomes among persons who are released from jail and prison. As a case study, expansion of HCV treatment during incarceration is feasible, cost-effective, and the best option to move closer to national HCV elimination [78, 79]. HCV diagnosis in jails with linkage postrelease is a feasible alternative if HCV treatment costs are deemed prohibitive [80]. A major barrier in HCV linkage to care postrelease is that 90% of states have policies that withdraw enrollment in insurance programs when people are incarcerated, outsourcing health care to medical corporations hired by criminal justice

administrators [81]. Prior to release, there are often attempts to reestablish health insurance, but this is complex because of uncertainty around the date of release and place the person will live. The process of re-entry is a vulnerable time for people who are incarcerated, with high mortality related to drug use but also associated with suboptimal postrelease management of chronic conditions like liver disease [82]. Increased flexibility of Medicaid, allowing initiation of insurance before release and sustained coverage prior to conviction, would improve health care transitions into and out of correction settings.

Finally, additional research funding is needed to develop and evaluate strategies to manage non-HIV/HCV-related infections secondary to IDU, such as skin and soft tissue infections or infective endocarditis. Despite increasing frequency of endocarditis in people with OUD/SUD [7], and high rates of history of incarceration in people with skin and soft-tissue infections [7], there are limited data on the epidemiology of disseminated bacterial and fungal infections in CJIP.

## CONCLUSION

Since the time this manuscript was accepted in December of 2019 the COVID-19 pandemic has changed the world and has made the implementation of many of these recommendations even more urgent.

We are at a pivotal moment in the opioid epidemic in the United States. As we desperately attempt to decrease the staggering number of overdose deaths, we must also grapple more broadly with IDU in general, which is causing increases in HIV, HCV, and other IDU-related infections. As a result, we as infectious disease specialists need a paradigm shift in our clinical approach, and we need broad and aggressive policy changes to support that shift. Throughout history, infectious diseases clinicians have risen to the challenge. In 1998, Dr Jonathan Mann said in an address, “When the history of AIDS and the global response is written, our most precious contribution may well be that, at a time of plague, we did not flee, we did not hide, we did not separate ourselves.” This time is no different—it is our epidemic too.

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## References

1. Rudd RA, Seth P, David F, Scholl L. Increases in drug and opioid-involved overdose deaths—United States, 2010–2015. *MMWR Morb Mortal Wkly Rep* **2016**; 65:1445–52.
2. Ronan MV, Herzig SJ. Hospitalizations related to opioid abuse/dependence and associated serious infections increased sharply, 2002–12. *Health Aff (Millwood)* **2016**; 35:832–7.
3. Ruhm CJ. Nonopioid overdose death rates rose almost as fast as those involving opioids, 1999–2016. *Health Aff (Millwood)* **2019**; 38:1216–24.
4. Conrad C, Bradley HM, Broz D, et al; Centers for Disease Control and Prevention (CDC). Community outbreak of HIV infection linked to injection drug use of oxymorphone—Indiana, 2015. *MMWR Morb Mortal Wkly Rep* **2015**; 64:443–4.
5. Zibbell JE, Asher AK, Patel RC, et al. Increases in acute hepatitis C virus infection related to a growing opioid epidemic and associated injection drug use, United States, 2004 to 2014. *Am J Public Health* **2018**; 108:175–81.
6. Schranz AJ, Fleischauer A, Chu VH, Wu LT, Rosen DL. Trends in drug use-associated infective endocarditis and heart valve surgery, 2007 to 2017: a study of statewide discharge data. *Ann Intern Med* **2018**; 170:31–40.
7. Wurcel AG, Anderson JE, Chui KK, et al. Increasing infectious endocarditis admissions among young people who inject drugs. *Open Forum Infect Dis* **2016**; 3:ofw157.
8. Fleischauer AT, Ruhl L, Rhea S, Barnes E. Hospitalizations for endocarditis and associated health care costs among persons with diagnosed drug dependence—North Carolina, 2010–2015. *MMWR Morb Mortal Wkly Rep* **2017**; 66:569–73.
9. Jackson KA, Bohm MK, Brooks JT, et al. Invasive methicillin-resistant *Staphylococcus aureus* infections among persons who inject drugs—six sites, 2005–2016. *MMWR Morb Mortal Wkly Rep* **2018**; 67:625–8.
10. Cranston K, Alpren C, John B, et al. Notes from the field: HIV diagnoses among persons who inject drugs—Northeastern Massachusetts, 2015–2018. *MMWR Morb Mortal Wkly Rep* **2019**; 68:253–4.
11. Golden MR, Lechtenberg R, Glick SN, et al. Outbreak of human immunodeficiency virus infection among heterosexual persons who are living homeless and inject drugs—Seattle, Washington, 2018. *MMWR Morb Mortal Wkly Rep* **2019**; 68:344–9.
12. Evans ME, Labuda SM, Hogan V, et al. Notes from the field: HIV infection investigation in a rural area—West Virginia, 2017. *MMWR Morb Mortal Wkly Rep* **2017**; 67:257–8.
13. Harris AM, Iqbal K, Schillie S, et al. Increases in acute hepatitis B virus infections—Kentucky, Tennessee, and West Virginia, 2006–2013. *MMWR Morb Mortal Wkly Rep* **2016**; 65:47–50.
14. Substance Abuse and Mental Health Services Administration. Tip 63: medications for opioid use disorder—executive summary. Washington, DC: Department of Health and Human Services, **2018**.
15. Gowing L, Farrell MF, Bornemann R, Sullivan LE, Ali R. Oral substitution treatment of injecting opioid users for prevention of HIV infection. *Cochrane Database Syst Rev* **2011**; (8):CD004145.
16. Springer SA, Qiu J, Saber-Tehrani AS, Altice FL. Retention on buprenorphine is associated with high levels of maximal viral suppression among HIV-infected opioid dependent released prisoners. *PLoS One* **2012**; 7:e38335.
17. Springer SA, Di Paola A, Azar MM, et al. Extended-release naltrexone improves viral suppression among incarcerated persons living with HIV with opioid use disorders transitioning to the community: results of a double-blind, placebo-controlled randomized trial. *J Acquir Immune Defic Syndr* **2018**; 78:43–53.
18. Congressional Research Service. Opioid treatment programs and related federal regulations. Washington, DC: United States Congress, **2018**.
19. SUPPORT for Patients and Communities Act 1. Public Law No. 115–271 (**2019**).
20. HR 2740 Labor, Health and Human Services, Education, Defense, State, Foreign Operations, and Energy and Water Development Appropriations Act, 2020. Passed by the US House of Representatives 19 June **2019**.
21. HR 1865 - Further Consolidated Appropriations Act, 2020. <http://www.congress.gov/cgi-lis/bdquery/z?d116>. Accessed 2 January 2020.
22. HR 1329 Medicaid Reentry Act. Introduced 26 February **2019**.
23. HR 2569 Comprehensive Addiction Resources Emergency Act of 2019. Introduced 8 May **2019**.
24. HR 2482 Mainstreaming Addiction Treatment Act of 2019. Introduced 2 May **2019**.
25. Jones CM. Syringe services programs: an examination of legal, policy, and funding barriers in the midst of the evolving opioid crisis in the U.S. *Int J Drug Policy* **2019**; 70:22–32.
26. National Academies of Sciences, Engineering, and Medicine. Integrating responses at the intersection of opioid use disorder and infectious disease epidemics: proceedings of a workshop. Washington, DC: National Academies of Sciences, Engineering, and Medicine, **2018**.

27. Springer SA, Korhuis PT, Del Rio C. Integrating treatment at the intersection of opioid use disorder and infectious disease epidemics in medical settings: a call for action after a National Academies of Sciences, Engineering, and Medicine Workshop. *Ann Intern Med* **2018**; 169:335–6.
28. Platt L, Minozzi S, Reed J, et al. Needle and syringe programmes and opioid substitution therapy for preventing HCV transmission among people who inject drugs: findings from a Cochrane review and meta-analysis. *Addiction* **2018**; 113:545–63.
29. Peak CM, Stous SS, Healy JM, et al. Homelessness and hepatitis A—San Diego County, 2016–2018 [published online ahead of print 15 August 2019]. *Clin Infect Dis* doi: 10.1093/cid/ciz788.
30. Wiese AD, Griffin MR, Schaffner W, Stein CM, Grijalva CG. Opioid analgesic use and risk for invasive pneumococcal diseases. *Ann Intern Med* **2018**; 169:355.
31. Thakkar K, Weinstein ZM, Walley AY. Optimising health and safety of people who inject drugs during transition from acute to outpatient care: narrative review with clinical checklist. *Postgrad Med J* **2016**; 92:356–63.
32. Patel MR, Foote C, Duwve J, et al. Reduction of injection-related risk behaviors after emergency implementation of a syringe services program during an HIV outbreak. *J Acquir Immune Defic Syndr* **2018**; 77:373–82.
33. HR 2029. Consolidated Appropriations Act. Public Law No. 114-113. (2016).
34. The Policy Surveillance Program. A LawAtlas Project. Syringe Service Program Laws. <http://lawatlas.org/datasets/syringe-services-programs-laws>. Accessed 31 August 2019.
35. MacArthur GJ, van Velzen E, Palmateer N, et al. Interventions to prevent HIV and hepatitis C in people who inject drugs: a review of reviews to assess evidence of effectiveness. *Int J Drug Policy* **2014**; 25:34–52.
36. Burris S, Welsh J, Ng M, Li M, Ditzler A. State syringe and drug possession laws potentially influencing safe syringe disposal by injection drug users. *J Am Pharm Assoc (Wash)* **2002**; 42:S94–8.
37. Kerr T, Stoltz JA, Tyndall M, et al. Impact of a medically supervised safer injection facility on community drug use patterns: a before and after study. *BMJ* **2006**; 332:220–2.
38. Wood E, Tyndall MW, Zhang R, et al. Attendance at supervised injecting facilities and use of detoxification services. *N Engl J Med* **2006**; 354:2512–4.
39. Alcohol and Drug Foundation. Medically supervised injecting centres. <https://adf.org.au/insights/medically-supervised-injecting-centres/>. Accessed 3 September 2019.
40. Hood JE, Behrends CN, Irwin A, et al. The projected costs and benefits of a supervised injection facility in Seattle, WA, USA. *Int J Drug Policy* **2019**; 67:9–18.
41. Meinhofer A, Witman AE. The role of health insurance on treatment for opioid use disorders: evidence from the Affordable Care Act Medicaid expansion. *J Health Econ* **2018**; 60:177–97.
42. Saloner B, Landis R, Stein BD, Barry CL. The Affordable Care Act in the heart of the opioid crisis: evidence from West Virginia. *Health Aff (Millwood)* **2019**; 38:633–42.
43. McManus KA, Christensen B, Nagraj VP, et al. Evidence from a multistate cohort: enrollment in Affordable Care Act qualified health plans' association with viral suppression [published online ahead of print 18 November 2019]. *Clin Infect Dis* doi: 10.1093/cid/ciz1123.
44. Marks LR, Munigala S, Warren DK, Liang SY, Schwarz ES, Durkin MJ. Addiction medicine consultations reduce re-admission rates for patients with serious infections from opioid use disorder. *Clin Infect Dis* **2019**; 68:1935–7.
45. Akiyama MJ, Norton BL, Arnsten JH, Agyemang L, Heo M, Litwin AH. Intensive models of hepatitis C care for people who inject drugs receiving opioid agonist therapy: a randomized controlled trial. *Ann Intern Med* **2019**; 170:594–603.
46. Akiyama M, Lipsey D, Moonseong H, et al. Low hepatitis reinfection following direct acting antiviral therapy among people who inject drugs on opioid agonist therapy [published online ahead of print 26 July 2019]. *Clin Infect Dis* doi: 10.1093/cid/ciz693.
47. Altice FL, Kamarulzaman A, Soriano VV, Schechter M, Friedland GH. Treatment of medical, psychiatric, and substance-use comorbidities in people infected with HIV who use drugs. *Lancet* **2010**; 376:367–87.
48. Fanucchi LC, Walsh SL, Thornton AC, Nuzzo PA, Lofwall MR. Outpatient parenteral antimicrobial therapy plus buprenorphine for opioid use disorder and severe injection-related infections [published online ahead of print 26 July 2019]. *Clin Infect Dis* doi: 10.1093/cid/ciz654.
49. Andrilla CHA, Coulthard C, Patterson DG. Prescribing practices of rural physicians waived to prescribe buprenorphine. *Am J Prev Med* **2018**; 54:S208–S14.
50. Talal AH, Andrews P, Mcleod A, et al. Integrated, co-located, telemedicine-based treatment approaches for hepatitis C virus management in opioid use disorder patients on methadone. *Clin Infect Dis* **2019**; 69:323–31.
51. Kroelinger CD, Rice ME, Cox S, et al. State strategies to address opioid use disorder among pregnant and postpartum women and infants prenatally exposed to substances, including infants with neonatal abstinence syndrome. *MMWR Morb Mortal Wkly Rep* **2019**; 68:777–83.
52. American College of Obstetricians and Gynecologists. Routine tests during pregnancy. Washington, DC: ACOG, **2019**.
53. US Preventive Services Task Force. Draft recommendation statement hepatitis C virus infection in adolescents and adults: screening. Rockville, MD: USPSTF, **2019**.
54. Zibbell JE, Asher AK, Patel RC, et al. Increases in acute hepatitis C virus infection related to a growing opioid epidemic



- and associated injection drug use, United States, 2004 to 2014. *Am J Public Health* **2018**; 108:175–81.
55. Ly KN, Jiles RB, Teshale EH, Foster MA, Pesano RL, Holmberg SD. Hepatitis C virus infection among reproductive-aged women and children in the United States, 2006 to 2014. *Ann Intern Med* **2017**; 166:775–82.
  56. Cottrell EB, Chou R, Wasson N, Rahman B, Guise JM. Reducing risk for mother-to-infant transmission of hepatitis C virus: a systematic review for the U.S. Preventive Services Task Force. *Ann Intern Med* **2013**; 158:109–13.
  57. Bell R, Wolfe I, Cox D, Thakara K, Lucas L, Craig A. Hepatitis C screening in mothers and infants exposed to opioids. *Hosp Pediatr* **2019**; 9:639–42.
  58. Midboe AM, Byrne T, Smelson D, Jasuja G, McInnes K, Troszak LK. The opioid epidemic in veterans who were homeless or unstably housed. *Health Aff* **2019**; 38:1289–97.
  59. Barocas JA, Beiser M, León C, Gaeta JM, O’Connell JJ, Linas BP. Experience and outcomes of hepatitis C treatment in a cohort of homeless and marginally housed adults. *JAMA Intern Med* **2017**; 177:880–2.
  60. Beiser ME, Smith K, Ingemi M, Mulligan E, Baggett TP. Hepatitis C treatment outcomes among homeless-experienced individuals at a community health centre in Boston. *Int J Drug Policy* **2019**; 72:129–37.
  61. Bangsberg DR, Hecht FM, Charlebois ED, et al. Adherence to protease inhibitors, HIV-1 viral load, and development of drug resistance in an indigent population. *AIDS* **2000**; 14:357–66.
  62. Bronson J, Stroop J, Zimmer S, Berzofsky M. Drug use, dependence, and abuse among state prisoners and jail inmates, 2007–2009. Washington, DC: Bureau of Justice Statistics, US Department of Justice, **2017**.
  63. Hennessey KA, Kim AA, Griffin V, Collins NT, Weinbaum CM, Sabin K. Prevalence of infection with hepatitis B and C viruses and co-infection with HIV in three jails: a case for viral hepatitis prevention in jails in the United States. *J Urban Health* **2009**; 86:93–105.
  64. Zaller N, Brinkley-Rubinstein L. Incarceration, drug use, and infectious diseases: a syndemic still not addressed. *Lancet Infect Dis* **2018**; 18:1301–2.
  65. Stein MS, Spaulding AC, Cunningham M, et al. HIV-positive and in jail: race, risk factors, and prior access to care. *AIDS Behav* **2013**; 17(Suppl 2):S108–17.
  66. Lim S, Seligson AL, Parvez FM, et al. Risks of drug-related death, suicide, and homicide during the immediate post-release period among people released from New York City jails, 2001–2005. *Am J Epidemiol* **2012**; 175:519–26.
  67. Binswanger IA, Blatchford PJ, Mueller SR, Stern MF. Mortality after prison release: opioid overdose and other causes of death, risk factors, and time trends from 1999 to 2009. *Ann Intern Med* **2013**; 159:592–600.
  68. Chang Z, Lichtenstein P, Larsson H, Fazel S. Substance use disorders, psychiatric disorders, and mortality after release from prison: a nationwide longitudinal cohort study. *Lancet Psychiatry* **2015**; 2:422–30.
  69. Nijhawan AE, Salloway R, Nunn AS, Poshkus M, Clarke JG. Preventive healthcare for underserved women: results of a prison survey. *J Womens Health* **2010**; 19:17–22.
  70. Charuvastra A, Stein J, Schwartzapfel B, et al. Hepatitis B vaccination practices in state and federal prisons. *Public Health Rep* **2001**; 116:203–9.
  71. Akiyama MJ, Columbus D, MacDonald R, et al. Linkage to hepatitis C care after incarceration in jail: a prospective, single arm clinical trial. *BMC Infect Dis* **2019**; 19:703.
  72. Green TC, Clarke J, Brinkley-Rubinstein L, et al. Postincarceration fatal overdoses after implementing medications for addiction treatment in a statewide correctional system. *JAMA Psychiatry* **2018**; 75:405–7.
  73. Degenhardt L, Larney S, Kimber J, et al. The impact of opioid substitution therapy on mortality post-release from prison: retrospective data linkage study. *Addiction* **2014**; 109:1306–17.
  74. Sander G, Murphy F. The furthest left behind: the urgent need to scale up harm reduction in prisons. *Int J Prison Health* **2017**; 13:185–91.
  75. Walker S, Seear K, Higgs P, Stooze M, Wilson M. “A spray bottle and a lollipop stick”: an examination of policy prohibiting sterile injecting equipment in prison and effects on young men with injecting drug use histories [published online ahead of print 16 August 2019]. *Int J Drug Policy* doi: 10.1016/j.drugpo.2019.07.027.
  76. Brinkley-Rubinstein L, Dauria E, Tolou-Shams M, et al. The path to implementation of HIV pre-exposure prophylaxis for people involved in criminal justice systems. *Curr HIV/AIDS Rep* **2018**; 15:93–5.
  77. Sander G, Shirley-Beavan S, Stone K. The global state of harm reduction in prisons. *J Correct Health Care* **2019**; 25:105–20.
  78. Assoumou SA, Tasillo A, Vellozzi C, et al. Cost-effectiveness and budgetary impact of HCV testing, treatment and linkage to care in U.S. prisons [published online ahead of print 16 May 2019]. *Clin Infect Dis* doi: 10.1093/cid/ciz383.
  79. He T, Li K, Roberts MS, et al. Prevention of hepatitis C by screening and treatment in U.S. prisons. *Ann Intern Med* **2016**; 164:84–92.
  80. Nguyen JT, Rich JD, Brockmann BW, Vohr F, Spaulding A, Montague BT. A budget impact analysis of newly available hepatitis C therapeutics and the financial burden on a state correctional system. *J Urban Health* **2015**; 92:635–49.
  81. Wakeman SE, McKinney ME, Rich JD. Filling the gap: the importance of Medicaid continuity for former inmates. *J Gen Intern Med* **2009**; 24:860–2.
  82. Springer SA, Spaulding AC, Meyer JP, Altice FL. Public health implications for adequate transitional care for HIV-infected prisoners: five essential components. *Clin Infect Dis* **2011**; 53:469–79.