Clinical Infectious Diseases

VIEWPOINTS

Infectious Complications of Addiction: A Call for a New Subspecialty Within Infectious Diseases

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Infectious diseases (ID) physicians are increasingly responsible for the management of infectious consequences of substance use disorders (SUD). While we are often consulted for diagnosis and treatment of the infectious disease, it is clear that successful management of these infections requires a holistic approach, including acknowledgement and treatment of the underlying SUD. As we have learned through years of treating human immunodeficiency virus and hepatitis C virus infections, ID physicians have unique expertise in addressing both the infection and the complex biopsychosocial factors that underpin the infection. Many ID physicians have incorporated the management of addiction as part of their scope of practice, and here we seek to give a name and define the role of these ID/addiction dual specialists. We define the potential role of ID/addiction physicians in clinical care, health administration, and research, as well as provide recommendations to bolster the supply and reach of this burgeoning subspecialty.

Keywords. addiction; substance use disorders; opioids; endocarditis; injection drug use.

In 2018, over 68 000 drug overdose deaths occurred in the United States, continuing a trend of increasing drug-related mortality that spans more than a decade [1]. While initial increases in opioid overdose deaths in the late 1990s were attributable to prescription opioids, changes in the drug supply have led to the involvement of heroin or illicitly manufactured fentanyl in the majority of these deaths [2]. Although opioids remain implicated in the largest number of deaths, there are increases in overdoses involving all drug classes and polysubstance use, with especially large increases from stimulants [3, 4]. Substance use disorders (SUD), including opioid use disorders (OUDs), are chronic, relapsing diseases of the brain and can be effectively treated using a chronic-care model and medications [5]. There are 3 Food and Drug Administration–approved medications for OUD (MOUDs)—buprenorphine, methadone, and extended-release naltrexone—that reduce opioid cravings, reduce overdoses, and lead to decreased mortality, yet these lifesaving medications remain underutilized and inaccessible to many [6]. According to the Surgeon General's report, only 1 in 10 Americans with addiction receive treatment, and many of them get care that isn't evidence-based [7].

Increasing rates of OUD have resulted in an emergent epidemic of infectious complications of infection drug use (IDU) that include outbreaks of human immunodeficiency virus (HIV) [8, 9] and hepatitis C virus (HCV) [10], as well as increasing hospitalizations and deaths from skin and soft tissue infections, osteomyelitis, septic arthritis, bacteremia, central nervous system infections, and infective endocarditis [11–15]. While the incidence of IDU-associated infectious syndromes has increased, the medical system has not risen to meet these challenges. Among patients presenting to the health-care system with OUD-associated infections, addiction as the underlying cause of the disease is often under-recognized and undertreated, with relatively few people receiving life-saving MOUDs [16–18]. Furthermore, when addiction care is available, it is often fragmented and not well integrated with ID care. Addiction medicine care among patients with IDU-associated infections can be cost-effective and is associated with improved infection and addiction outcomes [19, 20]. Referral to addiction treatment is associated with decreased mortality in patients with IDU and infective endocarditis [21]. Additionally, patients with HIV who receive medications for their SUDs have improved viral suppression and increased retention in HIV care [22–24]. Among patients with HCV, the provision of MOUDs facilitates successful cures and is feasible in primary care and in methadone maintenance programs [25]. There is a need for physicians and health-care systems able to provide integrated care to patients with IDU-associated infectious diseases.

THE CASE FOR INFECTIOUS DISEASE/ADDICTION SPECIALISTS

ID physicians are uniquely equipped to integrate treatment for SUDs into clinical infectious disease care. Doing so has the potential to make major impacts on the lives of individual patients

Received 3 June 2019; editorial decision 11 August 2019; accepted 14 August 2019; published online August 17, 2019.

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Clinical Infectious Diseases® 2020;70(5):968–72

DOI: 10.1093/cid/ciz804

and on the health-care system as a whole. ID physicians routinely confront the social determinants of health, whether through HIV treatment or other diseases enabled by poverty. Our patients are often the most stigmatized and neglected by society. Thus, we are especially attuned to the delicate interplay between an individual's environment, social circumstances, mental health, and medical conditions, and how each of these issues must be addressed to achieve successful health outcomes. Our expertise and impartiality are well suited to the treatment of addiction and its infectious complications. Furthermore, many ID physicians report interest in managing addiction, and some already make this a part of their routine practice [26].

Patients with infectious complications of addiction will benefit from the comprehensive, coordinated care made possible by ID/addiction physicians. Just as Ryan White–funded HIV clinics lead to improved outcomes, compared to privately insured patients, through providing integrated medical, behavioral, and social services [27], ID/addiction physicians take a similar, all-inclusive approach. The compassion and dedication required to manage infectious complications of the opioid epidemic are traits that characterize ID physicians. These traits were most prominent during the early HIV/acquired immunodeficiency symdrome epidemic in the United States, but have remained consistent over time, as evidenced by work with tuberculosis and Ebola. The ID community has consistently ventured into uncharted territories that others resist.

Addiction treatment should not be limited to those specialties that have traditionally treated it. Currently, clinicians in internal medicine, psychiatry, and family medicine provide most addiction care. There is, however, room to expand as this disease cuts across disciplines. This is especially pertinent for specialists who encounter the infectious sequelae of SUD, such as infectious disease physicians. There is a need for physicians with dual expertise in the management of both infectious diseases and SUD. Just as some ID physicians have chosen to specialize in the treatment of HIV or transplant ID, we propose the recognition, promotion, and development of ID/addiction specialists.

Clinical Needs

ID/addiction physicians are needed in clinical care to both improve individual patient outcomes and to impact the larger care-delivery system. First, expertise in addiction medicine is crucial for the inpatient management of our patients with serious bacterial or fungal infections caused by ongoing illicit drug use [19]. The recognition and diagnosis of addiction in these patients is the first step to increasing awareness and transitioning toward addiction treatment. IDU-associated infections lead to high rates of readmission and have high mortality, and there is reason to believe that inpatient initiation of MOUDs improves both infection- and addiction-related outcomes for those with underlying OUD [16, 19, 28, 29]. ID/addiction physicians provide holistic integrated care, aid in transition to the outpatient setting, and co-manage patients' infections and addiction after discharge. They are an important voice in determining surgical candidacy, based on an evaluation of infection severity and addiction disease activity. ID/addiction physicians also aid in a more seamless hand-off or transition of care to primary care or addiction medicine providers for long-term OUD management once the infectious complication has been treated. For acute bacterial and fungal infections, which require several weeks of curative treatment, the MOUDs provided by ID/addiction physicians serve as secondary prevention of future infections and are especially important when prosthetic material has been introduced.

There is a similar need for integrated infectious disease and addiction medicine services in the settings of HIV and HCV treatment. Integrated programs that include HIV, HCV, and OUD treatment exist, but are not widespread. For HIV, infectious disease physicians can provide MOUDs in addition to antiretroviral therapy, which enhances adherence and retention in care, facilitates viral suppression, and prevents transmission of HIV [22–24, 30]. People living with HIV have a high burden of chronic pain and frequent use of long-term opioid therapy; many of these patients also have or may develop concomitant OUD. Infectious disease physicians are able to implement safe opioid prescribing, in addition to identifying addiction and implementing addiction treatment. HCV is now easily curable and only requires 8–12 weeks of directly acting antiviral (DAA) treatment to develop a sustained viral response. Mathematical modeling has demonstrated that MOUD treatment linked with DAA can reduce new HCV infections [31]; thus, ID specialists can provide both DAAs and MOUDs to promote retention in care and increased rates of cure, as well as reduce reinfections.

Administrative and Policy Needs

On a health-system level, ID/addiction physicians use their expertise to help design and improve systems of care for patients with IDU-associated infections. They help develop policies to ensure evidence-based care for patients with infections from SUDs. This includes system-level procedures, such as order sets to promote health-care maintenance for patients with addiction (eg, HIV, HCV, and sexually transmitted infection screening; hepatitis A and B vaccination; education/referral for HIV preexposure prophylaxis services; and opioid overdose prevention and naloxone distribution). There is a need for leadership of multidisciplinary teams for the management of complicated infections requiring surgical intervention [32]. Perhaps most importantly, ID/addiction physicians help reduce stigma for health-system stakeholders and normalize addiction as a medical problem in need of medical treatments. In a health policy capacity, ID/addiction physicians should bring attention to the problems of IDU-associated infections and advocate for

legislation to support solutions. Examples include lobbying to deregulate the prescription of buprenorphine [33], expanding access to syringe exchange programs, and supporting funding for pre-exposure prophylaxis.

Research Needs

Although there are many evidence-based actionable interventions for patients with SUDs, many questions remained unanswered, especially in the field of infectious sequelae of substance use. Very broadly speaking, there is no established best practice to manage infectious complications of addiction; thus, expanding research in this area is important to informing clinical practice, especially in large, busy, tertiary hospital programs. A number of issues in need of investigation come up in daily clinical practice, such as: in what setting should patients with IDU-associated infections be treated? Are MOUDs effective at preventing initial or recurrent infections? Which MOUD provides the most protective benefit to infected patients? Is inpatient initiation of MOUD superior to a referral for treatment? Are peripherally inserted central catheters safe in patients with ongoing SUDs? What is the role of oral antibiotics for serious IDU-associated infections? What is the role of antibiotics with very long half-lives? These are critical knowledge gaps with wide-ranging implications that ID/addiction physicians are poised to help answer.

APPROACHES TO THE PROBLEM

Enhancing Training in Addiction Medicine

Medical trainees are frequently confronted with the sequelae of opioid misuse and use disorder, including fatal and nonfatal overdoses and infectious diseases. They also routinely help manage the complex social issues associated with addiction, such as a lack of housing, domestic violence, and food insecurity. Yet despite frequent exposure to substance use disorders, few internal medicine residents feel very confident in diagnosing addiction and fewer feel comfortable providing treatment [34]. To enhance training in addiction medicine, infectious disease fellowship programs should offer rotations on addiction medicine consult services, which have been shown to have beneficial effects on residents' addiction expertise (Table 1) [35]. All graduating ID fellows should complete the Drug Abuse Treatment Act of 2000 waiver training to prescribe buprenorphine. ID/addiction fellowship tracks, akin to transplant ID concentrations, should be developed to provide focused clinical, research, and mentorship opportunities. Interested fellows should be referred to apply for training programs, such as the National Institute on Drug Abuse (NIDA) and Boston Medical Center's Fellow Immersion Training in Addiction Medicine program [36], as well as the American Society of Addiction Medicine's Ruth Fox Scholarship [37]. For fellows dedicated to a career at the crossroads of ID and addiction medicine, opportunities for combined ID/addiction medicine fellowship programs should be expanded, with a goal of sitting for both ID and addiction boards [38].

Table 1. Actions to Develop the Field of Infectious Disease/Addiction Medicine

Actions to enhance training in addiction medicine
For infectious disease fellows
○ DATA waiver training for all ID fellows
○ Fellow rotations in addiction medicine
○ Cross-disciplinary training programs (FIT, Ruth Fox Scholarship)
○ Development of ID/addiction tracks within ID fellowship programs
○ Creation of combined ID/addiction fellowship programs
For all infectious disease physicians
○ Joint ID and addiction medicine case conferences and grand rounds
○ Multidisciplinary care teams for infectious complications of SUD syndromes (eg, endocarditis teams)
○ ID and addiction attendings with "office hours" in each other's clinics
○ Experience visiting harm reduction programs, including syringe exchange programs
Actions at the ID society level
○ ID/addiction interest groups and dedicated message boards
○ Mentorship programs
○ Inclusion of ID/addiction specialists on guidelines committees (eg, endocarditis)
○ ID/addiction early career investigator society grant awards
○ Addiction track at ID Week with dedicated presentations and meetings
○ Support for publication of ID/addiction research in society-sponsored journals
Actions to improve research
○ Encourage investigators to apply for funding through NIDA and NIAID for ID/addiction projects
○ Earmarked NIH funding for research of ID/addiction topics, including demonstration projects and implementation science
○ Fast-track grant evaluations for ID/addiction topics with reviews every 3 months, rather than 6 months.

Abbreviations: DATA, Drug Abuse Treatment Act of 2000; FIT, Fellows Immersion Training in Addiction Medicine Program; ID, infectious disease; NIAID, National Institute of Allergy and Infectious Disease; NIDA, National Institute on Drug Abuse; NIH, National Institutes of Health; SUD, substance use disorders.

Outside of ID fellowship training, there are opportunities and needs to increase all ID physicians' comfort with addiction. Cross-pollination between ID and addiction medicine divisions will be mutually beneficial. It will allow for better understandings of the nuances of assessment and management of patients with infectious complications of SUD. The development of multi-disciplinary care conferences for complex ID/addiction cases is a first step toward integrated care. Having ID physicians stationed in addiction medicine clinics, and vice versa, where they are available for real-time consultation, will improve care and build mutual expertise. Although addiction treatment is not within the scope of training for many ID physicians, all of us confront patients with SUDs. Thus, all ID physicians should be educated on the tenets of harm reduction, and gain experience counseling patients on safe injection practices (eg, not reusing injection equipment, regular skin cleaning), syringe service programs, overdose education and naloxone use, and MOUDs.

Society-level Interventions

ID/addiction physicians in leadership roles of the Infectious Diseases Society of America (IDSA), Society for Healthcare Epidemiology of America, HIV medical association, and Pediatric IDSA will help guide the implementation of programs to nurture this emerging field. The development of an interest group, the creation of dedicated message boards, and providing mentorship will help build a community of ID/addiction physicians in the IDSA. Ensuring the representation of addiction specialists on guideline and ID Week planning committees will help spread best practices and education to other IDSA members. IDSA-sponsored journals have already done an excellent job of publishing innovative research at the intersection of ID and addiction, and will continue to be an important asset. The ID societies should continue their support of ID Week Drug Abuse Treatment Act 2000 waiver trainings, as well as efforts to expand the general ID workforce.

Research Interventions

To improve the volume and quality of clinical research, funding organizations should be lobbied to increase the availability of grants dedicated to infectious complications of addiction. Investigators should be encouraged to apply for National Institutes of Health funding through the NIDA, in addition to the National Institute of Allergy and Infectious Disease. The National Institute of Allergy and Infectious Disease and NIDA should consider a fast-track grant review mechanism, similar to that for HIV research, for high-priority ID/addiction research, especially for projects that expand access to SUD treatment. A focus on pragmatic clinical trials, and implementation and demonstration projects, is of particular importance; we have treatments with proven efficacy for both infections and addiction, but a significant implementation and dissemination gap remains. Finally, researchers should publish their work in a variety of journal disciplines, such as general medicine and substance use disorder journals, in order to better disseminate knowledge outside of the ID community.

CONCLUSION

Infectious diseases account for a large proportion of nonoverdose deaths among people with opioid use disorder and other substance use disorders [39, 40]. Infectious disease physicians are uniquely prepared to help treat both infectious diseases and comorbid SUDs. Some ID physicians have already made addiction medicine a regular part of their clinical practice and research agenda. We propose the establishment of ID/addiction as a discrete subspecialty within ID, to help grow the cadre of physicians with dual expertise in this important field. Additionally, all ID physicians should gain expertise recognizing SUDs and implementing harm reduction interventions. Through educational initiatives, society activities, and the promotion of research, we believe ID physicians will be able to fill an important need in addressing the current drug overdose crisis and the future infectious disease/substance use disorder syndemic.

Notes

Financial support. This work was supported by the NIDA (grant number K02DA032322 to S. A. S.).

Potential conflicts of interest. S. A. S. received grant funding from the National Institute on Drug Abuse in support of this work for mentorship activities regarding the interaction of opioid use disorder and infectious diseases. Both other authors report no potential conflicts. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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