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The Geography of Opioid Use Disorder: A Data Triangulation Approach 451  
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Opioid use disorder is complex and not easily quantified among US populations because there are no dedicated reporting systems in place. We review indicators of opioid use disorder available at the state and county (human immunodeficiency virus [HIV] diagnoses among people who inject drugs, hepatitis C diagnosis in people <50 years, opioid overdose death rates, and opioid prescription rate). The interpretation of the ecological results and the visualization of indicators at the local level will provide actionable insights for clinicians and public health officials seeking to mitigate the consequences of opioid use disorder at the patient and community levels.

The Clinical Microbiology Laboratory and the Opioid Epidemic: Challenges and Opportunities 465  
Simeon D. Kimmel and Nancy S. Miller

Increased infections from injection drug use harm patients and are costly to the health care system. The impact on clinical microbiology laboratories is less recognized. Microbiology laboratories face increased test volume and test complexity from the spectrum and burden of pathogens associated with injection drug use, which lead to diagnostic challenges and overtaxed resources. We describe stressed workflows, pathogens that defy protocols, and limits of current technologies. Laboratories may benefit from protocol revisions, additional resources, workflow oversight, and improved communication with clinical providers to optimally meet challenges associated with this public health crisis.

Infective Endocarditis in Persons Who Use Drugs: Epidemiology, Current Management, and Emerging Treatments 479  
Asher Schranz and Joshua A. Barocas

Infective endocarditis associated with injection drug use (IDU-IE) is markedly increasing in the United States and Canada. Long-term outcomes are dismal and stem from insufficient substance use disorder treatment. In this review, we summarize the principles of antimicrobial and surgical management for infective endocarditis associated with injection drug use. We discuss approaches to opioid use disorder care and harm reduction in the inpatient setting and review opportunities to address preventable infections among persons injecting drugs. We highlight barriers to implementing optimal treatment and consider novel approaches that may reshape infective endocarditis associated with injection drug use treatment in coming years.
Infections are a common complication among people who inject drugs (PWID). Skin and soft tissue infections (SSTI) as well as bone and joint infections comprise a significant source of morbidity and mortality among this population. The appropriate recognition and management of these infections are critical for providers, as is familiarity with harm-reduction strategies. This review provides an overview of the presentation and management of SSTI and bone and joint infections among PWID, as well as key prevention measures that providers can take.

Acute bacterial infections such as endocarditis and skin and soft tissue infections are a common cause of hospitalization among persons with opioid use disorder (OUD). These interactions with acute care physicians provide an opportunity to diagnose OUD and treat patients with medications for OUD, including buprenorphine. When available, Addiction Medicine Consultation can be effective at linking patients to addiction treatment and also engaging patients in care for acute bacterial infections. In health systems without access to addiction medicine experts, infectious diseases providers, hospitalists, and other clinicians serve a valuable role in the diagnosis and treatment of OUD.

This article reviews the changing epidemiology of infections associated with injection drug use, perceived barriers to care, features of successful programs for outpatient antimicrobial treatment, models of shared decision making at the time of discharge, and linkage to preventative care after antimicrobial completion. In the search for patient-centered care associated with a rising substance use epidemic, one must continue to strive for novel collaborative approaches to ensure that each person is treated in the best way possible to successfully complete antimicrobial therapy, and then linked to a path of lifelong health care.

People who inject drugs (PWID) presenting with injection drug use-associated infections are an understudied population excluded from most prospective infectious disease (ID) clinical trials. Careful application of the existing ID literature to PWID must consider their unique medical, psychological, and social challenges. Identification and treatment of the underlying substance use disorder are key underpinnings to any successful ID intervention.
Hepatitis C virus (HCV) is highly prevalent in the criminal justice system and in persons who inject drugs, particularly opioids. Data on the impact of medications for opioid use disorder (MOUD) are abundant for infectious and noninfectious outcomes but are limited for justice-involved settings. This systematic review and meta-analysis focuses on the impact of MOUD on HCV incidence for persons in prisons and jails. Six studies were included in the qualitative synthesis, of which four were included for meta-analysis. A varied MOUD effect on HCV incidence was observed in part due to wide variability in prison and jail risk environments.

This article provides an overview of the diagnosis and management of opioid use disorder and its infectious complications among populations with criminal justice involvement. Opioid use disorder and chronic infections such as human immunodeficiency virus and hepatitis C virus are highly prevalent among incarcerated individuals and some of the unique features of correctional facilities present challenges for their appropriate medical management. We outline evidence-based strategies for integrated, patient-centered treatment during incarceration and the potentially hazardous transition back to the community upon release.

This article reviews the principles of harm reduction, evidence-based harm reduction strategies such as syringe service programs and supervised injection facilities, and provides approaches to integrating a harm reduction approach into clinical practice. As providers strive to increase capacity to treat underlying substance use disorder, we must also recognize that some people may continue to use drugs. In this setting, providers can still deliver nonjudgmental, individualized care, and advocate for the health and safety of people who inject drugs.

Managing patients with chronic pain on chronic opioid therapy (COT) can be challenging if done mainly by an individual clinician. A stepwise, systematic approach to managing patients on COT includes centering the discussion around safety for the patient. Treatment agreements and monitoring plans are important to safe prescribing. With a team-based care approach programs can be implemented, which optimize the benefits of opioid therapy and mitigate the risk. In these settings COT can be
prescribed adhering to current guidelines in order to help achieve pain management, optimize function, and advance the patients’ quality of life goals.

Lessons Learned from the Response to the Human Immunodeficiency Virus Epidemic that Can Inform Addressing the Opioid Epidemic 635

Sandra A. Springer and Carlos del Rio

The lessons learned from the response to the human immunodeficiency virus (HIV) epidemic are important to quell the opioid use disorder epidemic in the United States. This article identifies similar barriers to treatment and care that persons living with HIV experienced in the 1980s and early 1990s that are currently being experienced by persons living with opioid use disorder. In addition, this article reviews the ways in which those barriers were overcome to reduce the mortality and morbidity from HIV and highlights similar strategies that can also help persons living with opioid use disorder in this country.