

Partnering With State Health Departments to Address Injection-Related Infections During the Opioid Epidemic: Experience at a Safety Net Hospital

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Massachusetts is one of the epicenters of the opioid epidemic and has been severely impacted by injection-related viral and bacterial infections. A recent increase in newly diagnosed human immunodeficiency virus (HIV) infections among persons who inject drugs in the state highlights the urgent need to address and bridge the overlapping epidemics of opioid use disorder (OUD) and injection-related infections. Building on an established relationship between the Massachusetts Department of Public Health and Boston Medical Center, the Infectious Diseases section has contributed to the development and implementation of a cohesive response involving ambulatory, inpatient, emergency department, and community-based services. We describe this comprehensive approach including the rapid delivery of antimicrobials for the prevention and treatment of HIV, sexually transmitted diseases, systemic infections such as endocarditis, bone and joint infections, as well as curative therapy for chronic hepatitis C virus in a manner that is accessible to patients on the addiction-recovery continuum. We also provide an overview of programs that provide access to medications for OUD, harm reduction services including overdose education, and distribution of naloxone. Finally, we outline lessons learned to inform initiatives in other settings.

Keywords. bacterial infections; hepatitis C virus; HIV; opioid use disorder.

The opioid epidemic has driven a nationwide surge in injection-related infections among persons who inject drugs (PWID) in the United States. Blood-borne infections such as human immunodeficiency virus (HIV) [1–4], hepatitis C virus (HCV) [5, 6], and hepatitis B virus (HBV) are increasing along with injection-site abscesses and systemic bacterial infections such as endocarditis and osteomyelitis [7–10]. Some state and local departments of public health (DPH) have developed strategies to address the syndemic—the intersecting epidemics of substance use disorders (SUD) and infections. However, responses have not always coordinated infectious diseases (ID) and addiction medicine efforts alongside public health initiatives. Recent statements from professional societies have called for the expansion of integrated

management strategies [11] and development of interdisciplinary teams to combat these intersecting epidemics [12].

In addition to having one of the highest rates of opioid overdose deaths in the United States [13, 14], Massachusetts has experienced multiple clusters of new HIV diagnoses and acute viral hepatitis among PWID [15–17]. The coronavirus disease 2019 (COVID-19) pandemic has exacerbated challenges, as rates of both diseases rise with reduced access to testing and treatment. Encouragingly, research has shown that standardizing care models across inpatient and outpatient settings can increase access to medications for opioid use disorder (MOUD) and also reduce all-cause readmission and 12-month mortality [16–21]. We describe a partnership between Boston Medical Center (BMC) and the Massachusetts Department of Public Health (MDPH) that operates across all care settings to integrate the management of infectious diseases and SUD with public health interventions. This model could potentially be replicated in other parts of the country facing similar challenges (Figure 1).

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BOSTON MEDICAL CENTER: A SAFETY NET HOSPITAL AT THE EPICENTER OF THE OPIOID EPIDEMIC

Boston Medical Center is the largest safety net hospital in New England [22]. As a safety net hospital, it provides healthcare to

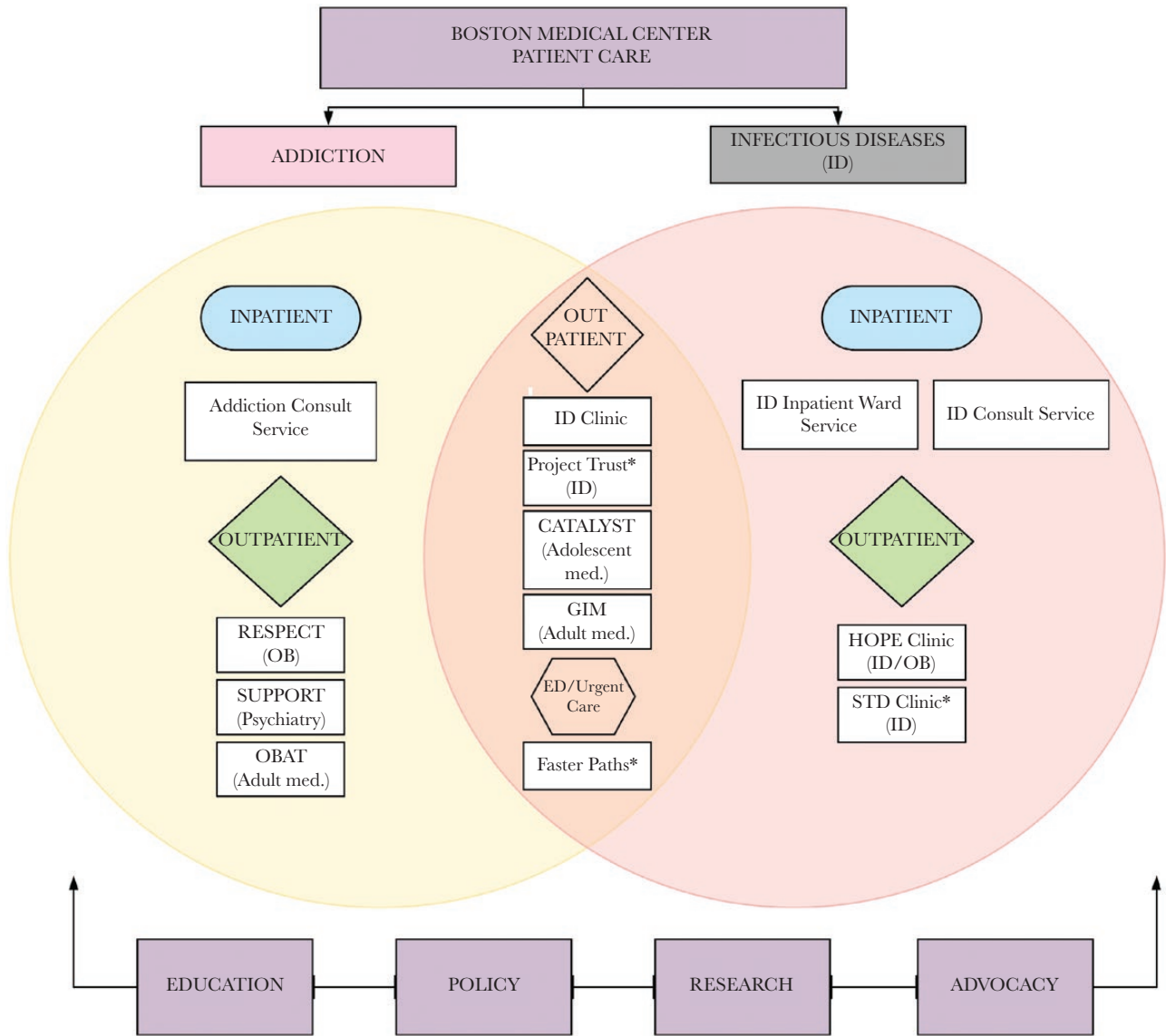


Figure 1. Overview of infectious diseases (ID) and addiction-related programs at Boston Medical Center. This figure depicts programs addressing the intersecting epidemics of substance use disorder and infectious diseases at Boston Medical Center. Initiatives involve patient care in the outpatient, inpatient, and the emergency department (ED) as well as education, research, advocacy, and policy. *Denotes programs that are directly funded by the Massachusetts Department of Public Health. CATALYST, the Center for Addiction Treatment for AdoLescent/Young adults who use SubStances; ED, Emergency Department; GIM, General Internal Medicine; HOPE, Positive HOPE clinic for pregnant women with human immunodeficiency virus; ID, Infectious Disease; OBAT, Office-based Addiction Treatment; RESPECT, Recovery, Empowerment, Social Services, Prenatal Care, Education and Community Treatment clinic; STD, sexually transmitted diseases; SUPPORT, Substance Use Program in Psychiatry on Recovery and Treatment.

all patients regardless of insurance status or ability to pay [23]. Approximately 70% of BMC patients are from underserved populations including low-income individuals, the elderly, and under-represented ethnic and racial groups [24]. Boston Medical Center has long provided comprehensive opioid use disorder (OUD) management and infectious disease care to PWID (Figure 2). Hospital-funded and public health-funded programs to prevent, screen for, and treat blood-borne infections among PWID are located throughout the medical center (Figure 1).

Examples of the BMC-MDPH partnership are present in ambulatory, urgent and/or emergent care, and inpatient settings.

This unique collaboration has resulted in adaptable, innovative programs that are guided by public health data, increase access to testing and preventative measures, integrate routine health-care into acute care settings, and reduce stigma (Table 1).

Ambulatory Care
Centers for Infectious Diseases

With the support of MDPH, the Centers for Infectious Diseases (CID) uses a multidisciplinary model to prevent and manage infectious diseases and comorbid addictions. In addition to treatment of HIV and HCV, HIV pre-exposure prophylaxis

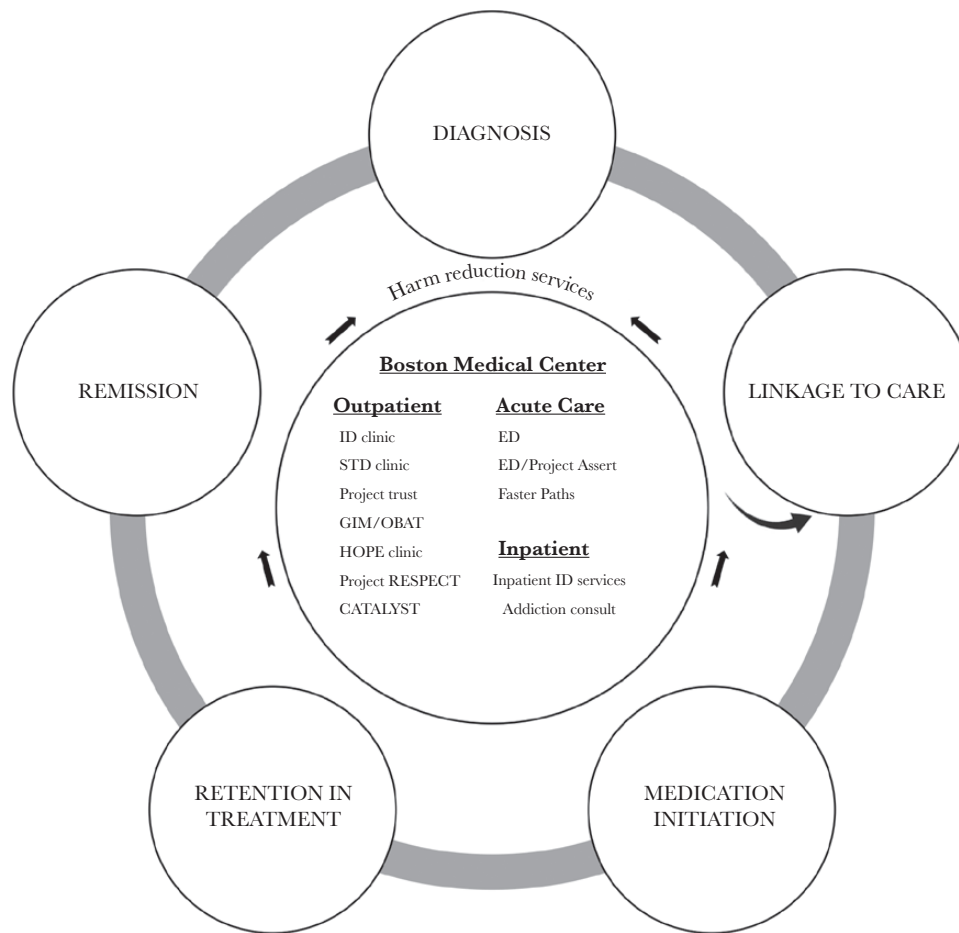


Figure 2. Integrated infectious diseases (ID) and addiction programs addressing the cycle of addiction and recovery among patients with opioid use disorder at Boston Medical Center. CATALYST, Center for Addiction Treatment for Adolescent/Young adults who use Substances; ED, emergency department; GIM, General Internal Medicine; HOPE, Positive HOPE clinic for pregnant women with human immunodeficiency virus; ID, Infectious Diseases; OBAT, Office-based Addiction Treatment; Project Assert, Alcohol and Substance Use Services, Education, and Referral to Treatment; RESPECT, Recovery, Empowerment, Social Services, Prenatal Care, Education and Community Treatment clinic; STD, sexually transmitted diseases.

(PrEP), and postexposure prophylaxis (PEP), the clinic offers onsite MOUD such as buprenorphine and extended-release naltrexone for OUD. The clinic also incorporates behavioral health and community support services to engage patients in care [25, 26].

Since its inception in the late 1980s, CID has been committed to engaging persons with HIV (PWH) with SUD in treatment by providing access to low-barrier addiction services. An MDPH demonstration project aimed at expanding HIV treatment to newly diagnosed and out-of-care PWH helped shape and define these efforts [27]. The project involved close collaboration of BMC clinicians and the MDPH HIV/AIDS Surveillance Program to identify and treat patients. It resulted in viral suppression for 75% of patients with SUD, allowing for rapid interruption of HIV transmission among local networks of PWID. This evolved into the Active Retention in Care for Health (ARCH) program [28], which consists of social and community health worker

teams that provide intensive case management for patients with significant unmet psychosocial needs, including SUD [29]. The ARCH's field-based teams accompany patients to appointments and coordinate referrals to drug detoxification centers, inpatient treatment, and methadone clinics. The team leverages community partnerships including local syringe services programs and drop-in centers to engage out-of-care PWH. Approximately 12.5% of the total number of PWH at BMC were identified as being at risk for being lost to follow-up, and with this program 67.5% were successfully re-engaging in care. In addition, approximately 200 new PWH initiate care in the ID clinic annually.

Centers for Infectious Diseases is also strengthened by input from BMC's long-standing Consumer Advisory Board for HIV care, which includes past and current PWID. In addition to MDPH-funded medical case managers, CID patients benefit from the co-location of psychiatry, behavioral counseling, and addiction support groups to promote engagement in care.

Table 1. Advantages Provided by the Partnership Between the Massachusetts Department of Public Health and Boston Medical Center

Partnership Advantages	BMC Programs
Use of Public Health Data to Guide Program Development and Tailor Outreach and Research Efforts <ul style="list-style-type: none"> MDPH's robust data on city and statewide rates of HIV infections, overdose events, and sexually transmitted infections allow for targeted program development to better serve patients 	ED/Project Assert, Project TRUST, STD clinic
Shared Expertise and Collaboration Across the City and State for Targeted Efforts on Infectious Outbreaks <ul style="list-style-type: none"> Partnership allows for bidirectional feedback on emerging population trends and concerns that in turn support rapid implementation of preventive and treatment interventions 	Faster Paths, GIM clinic, ID clinic, Inpatient Addiction consult service, Project TRUST
Implementation of Innovative Pilot Programs on a Targeted Scale <ul style="list-style-type: none"> Collaboration between MDPH and BMC enables pilot programs in targeted populations before statewide adaptations 	ED/Project Assert, ID clinic, STD clinic
Expanded Access to Testing and Linkage to Care <ul style="list-style-type: none"> Access to testing for infectious diseases including HIV in many healthcare locations leads to increased diagnosis, linkage to care, and rapid initiation of antiretroviral therapy 	ED/Project Assert, Faster Paths, HOPE clinic, ID clinic, ID Inpatient wards, Project TRUST, RESPECT clinic, STD clinic
Initiation and Retention on MOUD, and Overdose Education and Naloxone Distribution <ul style="list-style-type: none"> Access to MOUD in multiple care settings with the support of clinical teams and patient navigators to improve retention Efforts to reduce opioid overdose deaths by increasing access to overdose education and naloxone distribution 	Faster Paths, GIM clinic, ID clinic, Inpatient Addiction consult service, OBAT, Project TRUST, RESPECT clinic
Reduction of Stigma <ul style="list-style-type: none"> Emphasis on a welcoming healthcare setting providing holistic and integrated care 	All programs

Abbreviations: BMC, Boston Medical Center; CATALYST, Center for Addiction Treatment for Adolescent/Young adults who use Substances; ED, emergency department; GIM, general internal medicine; HIV, human immunodeficiency virus; HOPE, Positive HOPE clinic for pregnant women with human immunodeficiency virus; ID, infectious diseases; MOUD, medication for opioid use disorder; MDPH, Massachusetts Department of Public Health; OBAT, Office-based Addiction Treatment; Project Assert, Alcohol and Substance Use Services, Education, and Referral to Treatment; RESPECT, Recovery, Empowerment, Social Services, Prenatal Care, Education and Community Treatment clinic; STD, sexually transmitted diseases.

Currently, BMC's CID serves approximately 1600 PWH annually, including 40% diagnosed with SUD and approximately 60 patients currently treated on site with buprenorphine or naltrexone. In 2019, BMC performed 39% of MDPH-funded HIV tests ($n = 20\,975$) and identified 42% of new HIV diagnoses ($n = 80$) by the statewide contracted system (personal communication).

In addition to caring for PWH, CID also treats patients with HCV mono-infection and provides longitudinal care to patients with HIV/HCV or HBV coinfection. The CID is also home to the MDPH-funded Sexually Transmitted Diseases (STD) clinic providing low-barrier access to integrated testing for HIV, HCV, and STDs. Linkage to HIV PrEP, PEP, and STD treatment are

available on site. The syndemic has been marked by rising rates of STDs among PWH, and the STD clinic is an important component of the comprehensive care available at the medical center [30]. Patients with active SUD are also engaged in harm reduction services and—if desired—navigated to primary care. The program provides naloxone teaching and prescribing, immunization against vaccine preventable illnesses (hepatitis A and B), as well as prevention and treatment of injection-related bacterial infections.

Patients with severe SUDs requiring input from subspecialists are referred to FASTER PATH (Facilitated Access to Substance Abuse Treatment with Prevention and Treatment for HIV), a multidisciplinary office-based addiction treatment model within CID. Two addictions-trained general internal medicine (GIM) faculty, 1 Infectious Disease/Addiction faculty, and 3 combined Infectious Disease/Addiction Medicine fellows provide consultation and medication management for OUD, chronic pain in the setting of OUD, alcohol use disorder, and other SUD. The team collaborates with an addictions nurse care manager and integrated behavioral health specialists [31]. The FASTER PATH model has led to successful engagement, retention, virologic suppression, and maintenance on addiction pharmacotherapy among PWH with SUD [32].

Adult Primary Care/General Internal Medicine

Patients with SUD who receive primary care in GIM are supported by a robust Office-based Addiction Treatment (OBAT) program, often called the “Massachusetts Model” of collaborative care between nurse care managers and clinicians [33, 34]. The program is the largest academic hospital-based addiction clinic in New England and cares for over 700 patients each year with funding from MDPH. Within this model, clinicians prescribe buprenorphine or extended-release naltrexone, and nurse managers conduct frequent counseling and monitoring visits. In addition, integrated behavioral medicine teams lead individual and group addiction psychotherapy. Human immunodeficiency virus PrEP and STD/HCV care are also available. As with CID, MDPH funding allows for crucial support from community members: an MDPH-funded PrEP program coordinator and 2 navigators based in the STD clinic support patients and promote ongoing engagement in care. In turn, OBAT works with MDPH to provide technical assistance throughout the state.

Care of Special Populations: Pregnant Women, Adolescents and Young Adults, Transgender Individuals, and Persons Experiencing Homelessness or Unstable Housing

The RESPECT (Recovery, Empowerment, Social Services, Prenatal Care, Education and Community Treatment) clinic is an integrated addiction and prenatal care program [35], whereas the Center for Addiction Treatment for Adolescent/Young adults who use Substances (CATALYST) is the program

providing integrated medical, substance use, and behavioral healthcare for adolescents and young adults who use substances. The clinics provide routine HIV, HCV, HBV, and STD screening, STD treatment, and HIV PrEP. In addition, the Center for Transgender Medicine and Surgery offers primary care, behavioral health, endocrine, voice therapy, gender-affirming surgical services, STD testing, and PrEP for comprehensive care of transgender youth and adults [36]. Pregnant PWH receive comprehensive care at the Positive HOPE clinic, which is staffed by clinicians subspecializing in maternal-fetal medicine and adult and pediatric infectious diseases. The care team is supported by a medical case manager, a peer navigator, obstetrics nurses, and an ID pharmacist to enable comprehensive preconception, prenatal, and postpartum care to PWH.

Project TRUST is BMC's street level drop-in center for risk reduction and STD, HIV, and HCV testing for people with SUD experiencing homelessness or unstable housing. The facility has been in operation since 1987 and is now funded by MDPH, Boston Public Health Commission (BPHC) with contributions from the Grayken Center for Addiction Medicine and Gilead's Frontlines of Communities in the United States (FOCUS) grant. As a nontraditional clinical space physically separated from the hospital, Project TRUST engages patients who might feel uncomfortable in typical office settings. The center assists patients at any stage of the substance use continuum by providing harm reduction, clinical care, and care coordination [37]. As such, it serves as a bridge into longitudinal care. It is staffed by public health navigators who conduct daily street-based outreach at homeless shelters, community-based organizations, and nearby areas where PWID congregate. These navigators are supported by an ID/Addiction-trained physician and a nurse practitioner (NP). More recently, Project TRUST's navigators have participated in a pilot study funded through BMC's Grayken Center. The goal of the project is to support unstably housed PWID admitted for injection-related infections and assist with completion of antimicrobial treatment.

Lessons Learned From the Ambulatory Care Setting

The diverse ambulatory programs have benefited from flexible design and comprehensive care models aimed to increase patient engagement and retention. Offering multiple relevant and adaptable services provides numerous potential entry points to care. The MDPH funding and partnerships have resulted in programs with one-stop shop models where patients can access testing for infections, MOUD, overdose education, and routine and behavioral care. In addition, ambulatory care programs have benefited from integration with nonclinician team members, who help to address stigma and assist patients in addressing psychosocial barriers to care. Efforts to outreach and bring medical services to nontraditional clinical settings have helped to promote linkage to and retention in care. The MDPH grant funding has played an important role in these efforts,

allowing for rapid implementation of innovative ideas. In addition to funding, the MDPH provides public health data, data management, and helps to shape and reinvent BMC programs. Institutional support has also enabled the expansion and sustainability of the programs described, allowing them to expand and become more firmly established.

EMERGENCY DEPARTMENT/URGENT CARE SERVICES

Emergency Department

Acute care settings represent a unique and often unrealized opportunity to address OUD and injection-related infections through screening and linkage to care [38, 39]. A dedicated team of licensed alcohol and drug use counselors has collaborated for over 2 decades with emergency department (ED) clinicians to screen at-risk patients for SUD and provide linkage to addiction treatment and primary care through a Bureau of Substance Addiction Services (BSAS)-funded program known as Alcohol and Substance Abuse Services and Educating providers to Refer patients to Treatment (Project ASSERT) [40]. Referrals to social services including transportation and housing are essential components. Recent initiatives include buprenorphine waiver training for ED clinicians and in-ED buprenorphine initiation and methadone for withdrawal management. The ED staff also refers patients to Faster Paths, a walk-in clinic adjacent to the ED, where buprenorphine or extended-release naltrexone can also be initiated. Since 2016, the ED has been the site of universal opt-out HCV screening and linkage to care through funding by a Gilead FOCUS grant, and the rapid implementation of hepatitis A vaccination to address outbreaks of this infection among Boston's homeless and substance using populations.

Urgent Care: Faster Paths

"Faster Paths to Treatment" is a low-barrier SUD bridge clinic in operation since 2016 [41]. Funded by BSAS, it accepts walk-ins and referrals from the ED, inpatient services, and throughout the community. Faster Path's team includes physicians, NPs, nurse care managers, and licensed drug and alcohol counselors who work closely with an MDPH-funded PrEP coordinator. It offers onsite rapid access to buprenorphine and extended-release naltrexone for OUD, medications for alcohol and tobacco use disorder, outpatient detoxification, overdose-prevention education and naloxone, wound care, contraception, and vaccinations including hepatitis A virus (HAV) and HBV. Linkage to methadone maintenance programs, inpatient drug detoxification, residential recovery programs, primary care, and behavioral health are also provided. Faster Paths sees approximately 50 new patients per month for medication evaluation, and it seeks to engage high-risk patients not readily served by traditional outpatient SUD care settings. Many of the patients seen have unstable polysubstance use, a history of recent overdose, or recent release from correctional facilities.

As part of efforts to interrupt HIV transmission, HIV PrEP and PEP are available at Faster Paths. Because individuals initiating buprenorphine are usually seen once or twice per week for medication monitoring and refills, this allows for frequent discussion about PEP/PrEP adherence. Patients starting HIV PrEP are connected to BMC's MDPH-funded PrEP coordinator to ensure tracking and linkage to long-term PEP/PrEP clinicians. In 2017, Faster Paths instituted a standardized intake laboratory panel geared towards diagnosis and treatment of infectious diseases. The program offers screening for HIV, HCV, HBV, HAV, and STDs. In addition to testing, Faster Paths offers onsite, integrated STD, HCV, and HIV treatment for patients not ready to transition to a longitudinal care setting [42]. Throughout the COVID-19 pandemic, the clinic has developed innovative treatment strategies, including partnering with street outreach workers to provide OUD treatment via telehealth while regulations regarding buprenorphine initiation are relaxed. This partnership has demonstrated one of many ways that this low-barrier bridge clinic enhances delivery of therapies to vulnerable populations.

Lessons Learned From the Urgent/Emergent Care Setting

To serve as a bridge between the inpatient and outpatient settings, Faster Paths works closely with the ED and inpatient teams and prioritizes access. Whenever possible, patients are scheduled for same-day or next day appointments. This approach has been associated with increased odds of arrival to appointments [43]. Likewise, the intake protocol at Faster Paths has evolved to reduce wait-times, starting with clinician visits rather than intake by registered nurses. Adaptation of traditional care models has allowed the clinic to more adequately meet patients' needs during the critical posthospitalization period and facilitate transition into longer-term outpatient care.

INPATIENT SERVICES

The opioid overdose epidemic has been accompanied by bacterial infections including endocarditis and osteomyelitis that require inpatient management. The BMC inpatient ID ward and consult services and the Addiction Consult Service support the integration of infectious diseases and addiction medicine for hospitalized patients. Continuity between inpatient and outpatient clinicians and unique screening programs provide a bridge to continued treatment outpatient.

Currently, 2 ID Consult teams provide consultation throughout the hospital, to serve 1350 patients annually. Approximately 40% of patients have injection-related infections, and the service collaborates closely with the Addiction Consult Service to provide evidence-based treatment.

The ID/HIV inpatient ward service was established in 2016 given the rising number of injection-related infections. Research indicates that early involvement of ID physicians in

management of infections including *Staphylococcus aureus* bacteremia [44], multidrug-resistant organisms, and candidemia improve outcomes and mortality. The ID/HIV ward service consists of an ID supervising physician, internal medicine residents, medical students, and a dedicated pharmacist. The service admits patients with primary ID diagnoses as well as patients with a history of HIV admitted for any cause. The team treats approximately 900 patients yearly, 55%–60% of whom have SUD and are admitted for injection-related infections. Many of these patients do not have consistent outpatient care, and thus routine screening is woven into management of acute illnesses. Patients are screened for HCV and HIV, and PEP is offered inpatient, when indicated, with the goal of transition to PrEP as an outpatient. The ID service works closely with the Addiction Consult Service to facilitate management and successful transition to the outpatient parenteral antibiotic therapy (OPAT) program for those discharged home on long-term antibiotics. In line with emerging data, alternate evidence-based oral regimens are formulated for homeless or unstably housed patients with OUD who cannot manage OPAT and decline or are unable to be placed in a postdischarge skilled nursing facility for intravenous antibiotic therapy [45, 46].

“The Addiction Consult Service” was implemented in 2015 to improve the management of SUD for hospitalized patients [47]. The service includes a supervising addiction-trained physician, addiction medicine and psychiatry fellows, internal medicine residents, nurse practitioners, a social worker, and a recovery coach to assist primary teams with withdrawal management, and diagnosis and treatment of SUD [48]. Consultative services include MOUD management, linkage to longitudinal outpatient treatment programs, overdose prevention counseling, naloxone provision, harm reduction counseling, and motivational interviewing. A study of the first 26 weeks of the service demonstrated that initiation of MOUD in the hospital is feasible, but that further efforts were needed to improve linkage and retention in care after discharge [47]. As a result, the Faster Paths clinic was implemented to address this gap in care.

A BRIDGE BETWEEN INPATIENT AND OUTPATIENT TO IMPROVE CARE: THE ENDOCARDITIS WORKING GROUP

The Endocarditis Working Group was first convened in 2017 to facilitate complex decision-making for the care of individuals with injection drug use-related infective endocarditis (IDU-IE). Multidisciplinary endocarditis working groups in academic centers have been shown to improve patient outcomes [49, 50]. The group meets biweekly and convenes infectious diseases, cardiology, cardiothoracic surgery, addiction medicine, neurology, and inpatient general medicine physicians and pharmacists to develop treatment plans and follow patients through the duration of treatment, including acute or elective surgical care. One hundred sixty-seven patients were discussed over the first

3 years of the program (personal communication). The group is developing a longitudinal research cohort and implementing quality improvement measures to improve the care of patients with IDU-IE.

Lessons Learned From the Inpatient Setting

Inpatient services have benefited from unique efforts to ease the transition to outpatient care. The OPAT program provides close monitoring and support to encourage completion of antibiotics and adherence to MOUD therapy. Efforts to establish more robust clinical pathways and criteria for OPAT among PWID are underway. For example, BMC has formed a strong relationship with programs such as Barbara McInnis House [51], a 104-bed facility, located near the main hospital building. The McInnis House offers respite care for those who require closer posthospital discharge care. Partnerships with transition programs have been critical to reduce hospital re-admission and engage patients with long-term outpatient care.

POLICY, EDUCATION, AND RESEARCH

The Grayken Center is BMC's hub for addiction-related initiatives. Established in 2017, it serves as a national resource for disseminating evidence-based treatment and education practices. In addition, the center provides leadership to influence national, local, and institutional policy while working on advocacy for individuals with SUD. The Grayken faculty runs training programs, including one of the country's first Addiction Medicine Fellowships and a combined ID and Addiction fellowship, trainings on safe prescribing, treatment for SUD, and campus-wide overdose prevention initiatives including collaboration with public safety to enhance community naloxone response.

STRENGTHS AND LIMITATIONS

The MDPH and BMC partnership works across the full spectrum of care environments, helping to establish multidisciplinary teams focused on prevention and treatment of SUD and injection-related infections and advocacy for the rights and dignity of PWID. Innovative models such as the ARCH program have demonstrated the importance of diverse teams including social and community workers who can improve engagement with care, particularly in the outpatient settings. Addiction and Infectious Disease clinicians are involved in both inpatient and outpatient programs, with crossover between Addiction and Infectious Disease services, further improving continuity of care. In addition, these models have been designed and adapted to ease transitions from acute care to outpatient settings through transition programs such as OPAT, urgent care settings such as Faster Paths, and alliances with community programs such as Barbara McInnis House. Finally, the close relationship

between MDPH and BMC facilitates communication and coordinated responses to outbreaks. For example, the hospital is well positioned to assist in the response to new clusters of HIV, HCV, HAV, and HBV among PWID such as an HIV outbreak including approximately 130 HIV cases among persons with OUD in Massachusetts between 2015 and 2018 [52].

Persons who inject drugs often encounter overwhelming barriers to traditional healthcare, including lack of insurance, homelessness, incarceration, inadequate management of withdrawal symptoms, and stigma predisposing reluctance to engage in care [41]. Distrust of the medical system is further magnified among those from racially and ethnically marginalized populations. In spite of the services outlined above, delayed presentation to care has led to preventable OUD morbidity and mortality. Federal regulations that require a special waiver to prescribe buprenorphine, restrictive licensing to dispense methadone, and prohibition of safe consumption spaces present additional challenges to implementing evidence-based infection and overdose prevention for vulnerable patients. Future efforts may additionally include development and expansion of colocated medical services and public health programs such as food services, housing advocacy, syringe services, and other harm reduction techniques. In addition, silos in funding streams, reporting infrastructures, and leadership for many of the programs described limit the ability to pool data and identify local trends in patient outcomes in real-time. Potential opportunities exist to strengthen referral pathways to support PWID at all stages of the OUD cascade of care. Future efforts may additionally include development and expansion of colocations for medical services and public health programs such as food services, housing advocacy, syringe services, and other harm reduction techniques.

CONCLUSIONS

We describe a model of integrated SUD and infectious diseases care at an urban safety-net hospital located at the epicenter of a regional syndemic. Informed by the priorities of the public health organizations through which this consolidated model is aligned, cultivated by research and propagated by institutional advocacy, this paradigm has the flexibility to adapt to changes in local substance use patterns.

Collaborative models for PWID at BMC emphasize that OUD treatment and harm reduction are not solely the purview of addiction-trained clinicians and that screening, prevention, and management of injection-related infection can be successfully undertaken in primary care, ID, and community-based settings. Failure to effectively integrate OUD and ID services in multiple hospital locations—and collaborate with the public health agencies—represents a missed opportunity to end the opioid overdose epidemic and its related infections.

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