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REVIEW

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How competing needs after incarceration lead to adverse health outcomes among people who use criminalized drugs

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Abstract

In the USA, people with a history of criminalized drug use and drug use disorders reentering the community after incarceration frequently experience adverse health outcomes including overdose, suicide, and infectious disease acquisition. This review presents a conceptual model for understanding risk pathways for these outcomes related to post-release psychosocial needs. We first summarize the literature on post-release needs experienced by people who use criminalized drugs during reentry in multiple domains, including basic needs and those related to relationships as well as medical, mental health, and substance use problems. Drawing from a socioecological model, we demonstrate how vulnerability factors related to criminal legal involvement and criminalized drug use operate at intrapersonal (i.e., individual), interpersonal, institutional, community, and policy levels to negatively affect the ability of people who use drugs to meet each of these types of needs. We present research demonstrating that when people leaving incarceration are met with the overwhelming task of addressing competing demands, they often experience strong negative affect, which can lead to risk-conferring behaviors including criminalized drug use. Competing needs also create environmental conditions that amplify risk. We argue for the importance of interventions that address determinants of post-release health at individual and social-environmental levels to prevent adverse outcomes.

Keywords Mental health, Incarceration, Substance-related disorders, Drug overdose, Communicable diseases, Policy

Background

People who use criminalized drugs and those with illicit drug use disorders (DUDs) who are reentering the community after incarceration frequently return to (or continue) drug use post-release and are at high risk for adverse health outcomes including overdose, suicide, and infectious disease acquisition. Illicit drug use and DUDs are common among people with criminal legal involvement. Research suggests that up to two-thirds of people who are incarcerated meet the criteria for a DUD [1–3]. An even greater proportion report some degree of illicit drug use before their most recent incarceration [2, 3]. The proportion of people with DUDs who are incarcerated in prisons is 12 times that of adults in the general population [1]. Despite the high prevalence and severity of DUDs in carceral settings, treatment receipt remains low, with only a quarter of people in prisons and less than one-fifth of those in jails receiving treatment [1].

A significant proportion (up to one-third) of people who are released from prison use substances soon after their release [2, 4]. An even greater proportion (around two-thirds) of people with histories of injection drug and

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heroin use return to use within a few months [5, 6]. Notably, some with DUDs report no intention of maintaining abstinence after release from jail and prison [7–9], while others return to use unintentionally [8, 10]. Even among people who receive specialized DUD treatment while incarcerated, returning to drug use is more common than sustained abstinence [11]. Resuming drug use often happens in the first few days or weeks post-release, which can prevent linkage to DUD treatment and mental health services in the community [7, 8, 12]. Indeed, substance use is identified as the most common competing need to achieve well-being for those on probation or parole [13].

Returning to drug use in the community can result in adverse health outcomes. For example, a recent systematic review estimated that people released from prison have 27 and 16 times the mortality risk of community peers for the first 2 weeks and first year post-release, respectively [14]. Drug overdose is a leading cause of death for people who have been incarcerated [15, 16]. Suicide risk is also significantly elevated among people with recent incarceration, with substance use disorders (SUDs; i.e., alcohol and other drug use disorders) being a key suicide risk factor in this population [17, 18]. Illicit drug use is also associated with significant disease morbidity during the post-release period, including increased risk of acquiring human immunodeficiency virus (HIV) and hepatitis C viral infection (HCV) [19].

Although there is substantial literature examining post-release experiences, needs, and health and social outcomes for people with DUDs, the literature regarding pathways by which incarceration leads to the array of adverse outcomes experienced by people who use criminalized drugs is underdeveloped. Thus, the aims of this narrative review are to (a) summarize literature on key competing psychosocial needs faced by people who use criminalized drugs during the post-release period, as well as examples of overlapping vulnerabilities related to drug use and criminal legal involvement; (b) propose a conceptual model illustrating how these needs and underlying vulnerabilities interact to contribute to risk behaviors and subsequent adverse outcomes; and (c) identify related recommendations and directions for future research.

Conceptual model

Our conceptual model for understanding post-release competing needs and adverse outcomes is presented in Fig. 1. It expands and builds upon previous models of post-release health outcomes among people who use criminalized drugs, e.g., Binswanger et al. [20] and Joudrey et al. [21]. Drawing from the ecological model for health promotion [22] and informed by socioecological models such as the risk environment framework for drug-related harm [23, 24] and ecological systems theory [25], our conceptual model highlights that SUDs and criminal legal involvement create intersectional vulnerabilities across intrapersonal (i.e., individual), interpersonal, institutional, community, and policy levels. These vulnerabilities function to both *increase* or *intensify* the competing psychosocial needs experienced by individuals with DUDs after incarceration, as well as *decrease* their ability to address them, resulting in significant challenges. In the following sections, we discuss domains frequently addressed in the re-entry literature including basic needs (e.g., housing, employment) and those related to relationships as well as medical, mental health, and substance use problems. In response to difficulty meeting needs, people with DUDs commonly experience negative affect, which can lead to drug use and other behaviors that increase

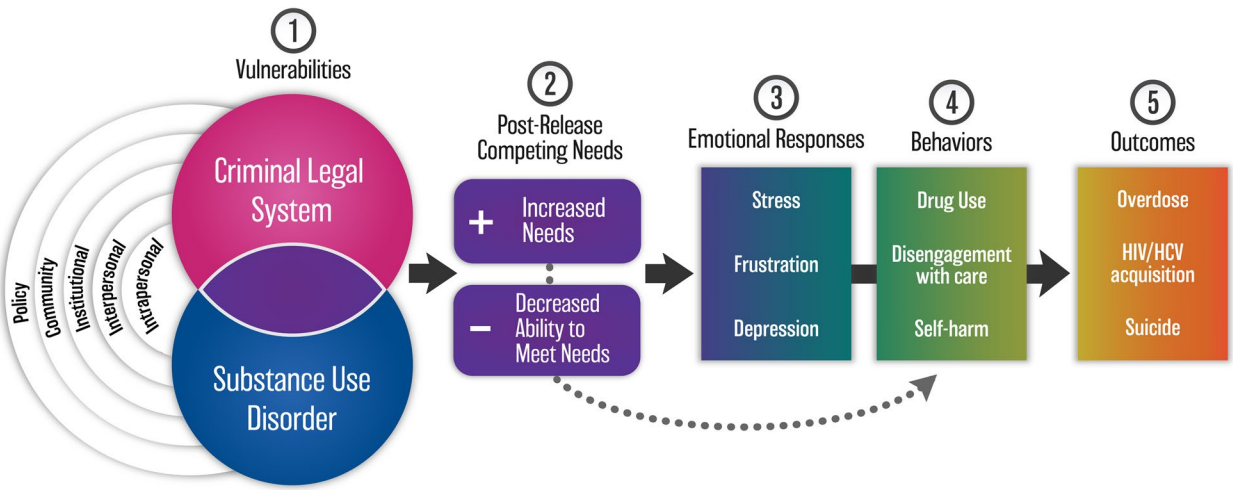

Fig. 1 Conceptual model of post-release needs, vulnerabilities, and outcomes

the risk of adverse health outcomes including overdose, suicide, and infectious disease acquisition. Competing psychosocial demands also directly create conditions that foster higher-risk behaviors (e.g., using drugs alone due to social isolation). In the following sections, we review relevant literature from which the conceptual model was formed and outline the overlapping vulnerabilities that people who use criminalized drugs face post-release.

Focus and key definitions

Policy, social, and environmental-level factors are often geographically defined, varying significantly within countries (e.g., across states; in rural vs. urban areas) as well as between countries. This review focuses primarily on US literature while incorporating key international examples to provide contrast and comparison. We focus primarily on people who use criminalized drugs, including people with DUDs (i.e., those with compulsive use of criminalized drugs that persists despite harmful consequences). While recognizing that (a) people use criminalized drugs for myriad reasons, including enjoyment, and (b) drug-related harms exist on a spectrum and not all drug use is problematic or harmful, our conceptual model is designed to illustrate risk pathways from competing needs to adverse outcomes and thus necessarily considers drug use within a risk framework. Of note, this review also incorporates broader literature (e.g., people with any SUDs) in key areas to supplement research specific to criminalized drug use and DUDs. Additionally, our review draws on literature related to both jail and prison incarceration. Prisons are typically state or federal carceral facilities for people serving post-conviction sentences, whereas jails are typically city or county facilities for people awaiting trial or serving short-term sentences [26]. Notably, a greater proportion of those in jails vs. prisons are incarcerated for drug-related charges [26]. While there are important differences between jail and prison that affect reentry needs, we believe our conceptual model is applicable to both types of incarceration experiences. This is supported by research showing that individuals leaving both jails and prisons experience a range of competing needs and related stressors during reentry (e.g., [8, 9, 27, 28]), and both jail and prison incarceration are associated with increased risk of post-release drug-related adverse health outcomes (e.g., [16, 19]). Additionally, although many of the competing needs and vulnerabilities described herein exist for those involved in the criminal legal system broadly (e.g., including individuals on probation or parole), we have chosen to focus on the reentry period after incarceration because evidence suggests that this is a period of significantly heightened risk for adverse health outcomes including drug-related mortality.

Intersectional risk

Having a DUD is one of many marginalized identities that intersect with criminal legal involvement and can exacerbate needs experienced during reentry as well as the difficulty of meeting these needs. Research suggests that people who are racially or ethnically marginalized [29, 30], women [31], and sexual minorities [32], among other groups, also experience specific competing needs and vulnerabilities after release from incarceration, as well as differences in risk of adverse health outcomes in the post-release period [33–36]. For example, women are more likely to be primary caregivers than men prior to incarceration [37], and reuniting with and caring for children is a major competing need experienced by women after release [38]. While an in-depth discussion of each of these identity factors is outside the scope of this review, it is important to note that marginalization based on criminalized drug use intersects with other types of marginalization. In the following sections, we summarize the literature on key competing needs faced by people leaving incarceration and the ways in which these needs and the ability to meet them are influenced by factors specific to *criminalized drug use* and *criminal legal involvement*.

Post-release competing needs and vulnerabilities among people who use drugs

Basic needs

Immediately upon release, people who have been incarcerated face a wave of practical challenges including finding housing, employment or a source of income, food, and transportation. Many have minimal support in meeting these basic needs [8, 27]. They may also be released without information about available services or support [20]. Individuals with recent incarceration frequently experience un- and underemployment, food insecurity, and burdensome probation and parole fees [13, 39]. Challenges meeting basic needs may continue for years; one study found that over one-third of individuals released from incarceration were continuously unemployed for over five years following release [40]. People leaving incarceration may need to prioritize basic needs over other important but less urgent needs such as prevention and treatment for medical problems and DUD. As a result, difficulties meeting basic needs can contribute to lower engagement in health services [20, 27, 41].

People with DUDs often start from a place of increased vulnerability regarding meeting basic needs during reentry. For example, on an intrapersonal level, people who use criminalized drugs are rated as having poor employment-related interpersonal skills and lower computer knowledge compared to the general population of job seekers [42], which puts them at a disadvantage when seeking employment. People with DUDs tend to have less

interpersonal support during reentry than individuals without substance use problems [43, 44], and they disproportionately reside in under-resourced communities [45–47]. This is particularly problematic since it is common to rely on social networks for help with housing, employment, and financial support post-release [48]. People who use criminalized drugs also face social and environmental barriers to employment and food access and are disproportionately unemployed after release from prison [2, 20]. Institutional employment barriers related to criminal legal involvement, including discrimination based on one's criminal record [27], are compounded by barriers related to drug use such as employment drug testing and discrimination based on one's SUD history [49]. Notably, even people who are in recovery from an SUD experience higher rates of involuntary job loss, despite federal prohibitions on discrimination based on past SUD diagnosis [50].

Policy-related barriers exacerbate the challenges people who use criminalized drugs face related to meeting basic needs. In the USA, public housing authorities are federally mandated to enact restrictions based on substance use, and 93% include eligibility bans based on the possession or use of illicit drugs [51]. When determining eligibility for public housing assistance, DUDs are excluded from the definition of "disability" [52] leaving people with DUDs vulnerable to discrimination based on their diagnosis. Furthermore, about half of states have some form of a ban on food-related benefits (e.g., the Supplemental Nutrition Assistance Program; SNAP) for people with drug felony convictions [53]. Those with drug convictions in states with a full ban on SNAP have a predicted poverty level that is nearly double compared to states without such bans [54]. In the USA, there are few federal protections for workers who use illicit drugs, making them more vulnerable to discrimination. International examples provide useful contrast; for example, countries such as Canada and Spain restrict or prohibit random drug testing and/or prohibit terminating employees based on drug test results in the absence of evidence that drug use is affecting job performance [55].

Relational needs

Incarceration negatively affects relationships and social support. Individuals who are incarcerated are at increased risk of divorce [56] and relationship dissolution [57] as well as loss of closeness in important relationships (e.g., between incarcerated parents and their children) [58]. Thus, people reentering the community after incarceration typically must reconnect with their loved ones, repair damaged relationships, and/or build new relationships. Social support is critical to many aspects of well-being during reentry and significantly predicts mental health during this period [59].

Meeting social needs can be particularly challenging for people with DUDs returning from incarceration. At the intrapersonal level, people with DUDs demonstrate deficits in social cognition, such as the ability to recognize others' emotions and mental states [60–62], which may contribute to difficulties in forming and maintaining relationships. Drug-related vulnerability factors compound with incarceration-related challenges to meeting relational needs. Interpersonally, people who use criminalized drugs experience high rates of drug-related stigma and discrimination in their relationships [63], and people with SUDs have, on average, less social support than people without these disorders [64, 65]. Individuals with DUD histories report having weak family support and the most family detachment during reentry from prison [44]. For people with prior DUDs who intend to maintain abstinence during reentry, meeting social needs is both particularly important and fraught. Low social support, lack of prosocial networks in the community, and relational stress have been linked to an increased risk of relapse (or increased probability of drug use) in previous research with criminal legal populations [8, 12, 41, 66–68]. However, individuals who desire abstinence report feeling the need to isolate themselves from previous relationships that were linked to their substance use [27]. This may be exacerbated by institutional and policy-related factors, such as conditions of probation or parole that limit who individuals on community supervision may associate or live with [69].

Medical needs

Incarcerated individuals experience a disproportionate burden of medical problems for which they may need care during reentry. The prevalence of chronic health conditions is higher in those who are currently or recently incarcerated compared to the general population [70, 71]. Many need medical care, including medication, soon after leaving carceral facilities. One study found that about one-third of people in a state prison system were receiving medication for a chronic health condition at the time of their release [72]. It is also common to develop new health problems or receive new diagnoses soon after release [5, 19], highlighting the importance of timely access to preventive care.

People who use criminalized drugs experience specific vulnerabilities that affect their ability to address health-related needs. For example, at the intrapersonal level, people who use criminalized drugs often have more complex healthcare needs compared to other individuals leaving incarceration, as illicit drug use is associated with increased risk of local and systemic bacterial infections,

fungal infections, HIV, and HCV [73]. The daily demands of drug dependence can also result in deprioritization of healthcare [74].

Accessing medical care after incarceration is also fraught with interpersonal, institutional, and community barriers. The latter include waitlists [20], lack of coordination and continuity of care [28, 66], and lack of affordable and accessible transportation to attend appointments [41]. Interpersonally, stigma further impedes people who use criminalized drugs from meeting healthcare needs, as perceived stigma and discrimination experienced by people who use criminalized drugs have been directly linked to lower healthcare utilization and access [75, 76]. Stigmatizing attitudes and beliefs by medical professionals toward people who use criminalized drugs are also associated with poor quality healthcare [77]. The stigma and suspicion experienced by people who use criminalized drugs when accessing medical care are compounded by policies aimed at limiting the misuse of controlled substances. For example, prescription drug monitoring programs can create barriers to effective medical pain management for individuals with current and past DUDs [78]. Additional policy-related barriers to post-incarceration healthcare access in the USA include the federal prohibition on Medicaid funds being used to pay for healthcare for incarcerated populations, which has resulted in state-level policies requiring termination or suspension of Medicaid for incarcerated individuals [79], often requiring reapplication and resulting in gaps in coverage post-release. In contrast, the model used in Norway, where universal healthcare is provided to incarcerated and non-incarcerated populations by the same agency, is associated with improved health outcomes and reduced recidivism for people leaving incarceration [80].

Mental health and substance use-related needs

People with mental health needs are overrepresented in carceral settings, and many individuals have mental health treatment needs post-release. A majority (53.5%) of people incarcerated in state and federal prisons endorse mental health problems [81]. Over half (56.5%) of individuals scheduled to be released from jails and prisons anticipate a need for mental health treatment during reentry, and 44% anticipate a need for both mental health and SUD treatment [82]. Indeed, co-occurring SUD and other mental illnesses are highly prevalent among people incarcerated in prisons, more so than in the general population [83]. Despite the high need, a minority of those leaving jails and prisons report receiving mental health treatment upon release [82].

There is also a high need for SUD treatment post-release. Less than half of those with SUDs receive necessary treatment while incarcerated in jails and prisons [1, 3]; subsequently, nearly two-thirds anticipate a need for SUD treatment upon release [82]. Nearly half of those leaving jails and prisons endorse making efforts to address substance use problems during re-entry, but less than one-third report receiving treatment in the months after their release [82, 84]. The rate of unmet SUD treatment needs for parolees is three times that of the general population, and these unmet needs are associated with significant psychological stress [85]. People who use criminalized drugs may also experience needs related to safer drug use (e.g., access to sterile injection supplies and naloxone) during the post-release period, as abstinence is not a top priority for many people leaving incarceration [8, 10].

People with DUDs experience vulnerabilities at the intrapersonal level that exacerbate the need for mental health and DUD treatment. One such factor is impairment in reward processing, which results in a decreased ability to anticipate and experience enjoyment from activities that do not involve drug use [86] and may contribute to a lower likelihood of seeking out drug-free activities. These individuals may also have few opportunities for rewarding activities in their physical and social environments, exacerbating mental health and DUD-related needs. Specifically, people with SUDs are disproportionately affected by a lack of social support [64] at the interpersonal level, as well as community-level poverty, neighborhood disadvantage [47, 87], and unemployment [88]. Thus, they may have fewer options for rewarding drug-free activities, which is associated with a greater likelihood of using illicit drugs [89] and is theorized to play a major role in depressive disorders [90]. Indeed, people who use criminalized drugs report that having things to do (e.g., hobbies, employment) during re-entry is protective against a return to use, whereas having nothing to do is a risk factor for drug use [8, 12].

Additional institutional and community-level barriers limit access to evidence-based mental health and substance use interventions. Many parts of the USA lack affordable, low-barrier mental health and DUD treatment options, and rural areas in particular may have few treatment options for those returning from incarceration [28]. Nationwide, a dearth of harm reduction and non-abstinence-focused treatments represents a critical barrier to meeting DUD-related needs given that the top reason for not seeking treatment is a lack of a desire to quit using drugs [91, 92]. Negative attitudes about harm reduction goals for drug use by treatment providers and administrators contribute to this gap in care [93]. Lack of care coordination between carceral and community treatment settings further complicates engagement in mental health and SUD treatment during reentry from jail and prison [28, 94]. A low proportion of programs offer integrated

dual-diagnosis treatment [95], which means that people who have comorbid DUD and psychiatric disorders may struggle to manage care in multiple locations. Individuals with comorbid disorders may also be prevented from accessing evidence-based psychopharmacological treatments including benzodiazepines and psychostimulants due to provider hesitance [96].

Institutional and policy-related barriers also affect access to evidence-based treatment for mental health and DUDs both within carceral settings and in the community. Medication for opioid use disorder (MOUD), including methadone and buprenorphine, is the most effective treatment approach for reducing overdose deaths [97]. Yet, despite recent increased availability in US carceral settings [98], as of 2019 (the most recent year for which nationwide data are available), less than one-third of jails administered MOUD [99]. Methadone is also strictly regulated in community settings, resulting in significant practical barriers to maintenance treatment [100]. Other evidence-based harm reduction interventions for drug use, such as supervised injection facilities (or overdose prevention centers) [101] and syringe services programs [102, 103], are also restricted by legal and policy-related barriers in many US states [102, 104]. Furthermore, individuals on community supervision are often required to submit to regular drug testing and positive drug tests increase the likelihood of revocation of supervision [105], resulting in reincarceration and preventing individuals from participating in community-based treatment. Notably, the USA lags behind many other countries with regard to policies facilitating access to evidence-based DUD treatment and harm reduction services. For example, as of 2013, most European countries were already providing MOUD in carceral settings, and since 2010, all prisons in Scotland have provided naloxone upon release for individuals at risk of opioid overdose [106].

Emotional and behavioral responses to competing needs

A growing body of research suggests that people leaving incarceration often experience strong negative affect in response to difficulty addressing competing needs, and the ability to cope with these emotions has been described as a "key determinant of longer-term outcomes" [107]. Negative emotions have been linked to multiple risk-related behaviors, including polydrug use [66], disengagement in HIV care [67], intentional overdose [66], and other self-harm [74].

Drug use is frequently described as a behavioral response to post-release negative affect. For example, participants with histories of incarceration note that difficulty meeting basic needs during reentry leads to stress, frustration, and depression and that these emotions contribute to drug use as a coping strategy [9, 12, 66, 74]. Individuals with comorbid psychiatric disorders and SUD leaving prison report feeling negative emotions before their first use of substances post-release, including depression, loneliness, hopelessness, discouragement, anger, and frustration [12]. One study found that depressive symptoms were associated with an increased risk of heroin use after release from jail or prison among people with histories of opioid use disorder [108]. Together, these data indicate that negative affect can act as a key mediator between competing needs and drug use during the reentry period.

At the intrapersonal level, difficulty with emotion regulation is a vulnerability factor that may increase engagement in riskier behaviors in response to competing needs. Emotion regulation includes awareness and acceptance of one's emotions and the ability to engage in goal-directed behaviors and control impulsive behaviors when experiencing emotions [109]. People with SUDs have significant challenges with emotion regulation compared to people without SUDs [110] and are particularly vulnerable to negative affect [111]. Difficulty regulating negative affect is associated with using illicit drugs to cope with strong emotions [112]. Thus, individual-level vulnerabilities may make people with DUDs more susceptible to strong negative affective states in response to reentry stressors and to coping with these emotions by using drugs.

Interpersonal, institutional, and community factors further contribute to drug-related risk during reentry. People who use criminalized drugs reentering the community often return to interpersonal and community settings associated with previous drug use [8, 10]. Being exposed during reentry to places where substances are sold and/or consumed can also precipitate use [8, 10], including when drug use occurs in settings where people access support (e.g., shelters and low-threshold drug treatment centers) [8]. Notably, certain policies discussed in the previous sections (e.g., restrictions on public housing for people who use criminalized drugs) may increase the likelihood that individuals returning from incarceration will be exposed to settings such as homeless shelters where drug use frequently occurs.

Competing needs create environmental conditions that foster higher-risk behaviors and serve to amplify risk. For example, lack of access to sterile injection supplies leads to syringe sharing, which increases the risk of HIV/HCV acquisition [113, 114]. Similarly, unmet relational needs may amplify the risk of fatal overdose by increasing the likelihood of using drugs alone; one study found that a majority of fatal overdoses were among individuals using alone and that not having a spouse was associated with a greater probability of using alone [115].

Adverse health outcomes

Illicit drug use during reentry is implicated in multiple adverse health outcomes. Much literature has focused on related individual risk behaviors (e.g., syringe sharing), yet in recent years, there has been increased attention to the socioenvironmental factors that contribute to risk. For example, previous reviews have identified multilevel factors contributing to overdose risk among those returning from incarceration (e.g., psychiatric diagnoses, disrupted social networks, poverty, prohibitions against MOUD) [21, 116], and research suggests that homelessness is associated with greater risk of fatal overdose [117, 118]. Notably, overdose risk behaviors identified in one review [21] overlap with behaviors that participants in qualitative studies endorse as coping strategies for negative affect associated with competing post-release needs (e.g., drug use, isolation, withdrawal from care). These studies underscore the importance of competing needs and vulnerability factors at all levels of the socioecological framework that contribute to post-release overdose risk.

A similar framework can be applied to understand the risk of other post-release adverse health outcomes among people who use criminalized drugs. For example, people recently released from incarceration also have a markedly increased risk of dying by suicide, which persists for multiple years after release [17, 18, 119]. Multiple studies have identified a history of SUD as a risk factor for suicide after release from prison [17, 120]. As pointed out by the authors of one study [119], well-established risk factors for suicide in the general population include competing needs that are common during the post-release period, such as homelessness, unemployment, low socioeconomic status, and mental illness. Qualitative research illustrates how these competing needs contribute to suicide risk among people released from incarceration, as difficult emotions in response to post-release stressors have been directly linked by people with SUD leaving incarceration to suicide (including intentional overdose) [20, 66] and self-harm [74].

The post-release period is also a time of increased risk for drug-related infectious disease acquisition. Research suggests that people who inject drugs have an 81% increased risk of acquiring HIV and a 62% increased risk of acquiring HCV in the year after release from incarceration [19]. Several factors related to post-release competing needs likely contribute to higher rates of infectious disease transmission among people who use criminalized drugs. During the post-release period, people with drug use histories are less likely to be engaged in effective forms of treatment such as methadone [121] and more likely to return to injection drug use if they had previously stopped [122]; they may also experience disruptions in access to harm reduction services, which could contribute to the higher rates of risky injection practices (e.g., syringe sharing) that are observed during the post-release period [123, 124]. Negative affective states and emotion dysregulation, as well as depressive symptoms, are associated with more risky injection practices [125–127], suggesting that emotion dysregulation in response to reentry stress may contribute to injection-related disease acquisition during reentry.

Summary

People who use criminalized drugs and those with DUDs experience intrapersonal, interpersonal, institutional, community, and policy-related vulnerabilities (Fig. 1, label 1) that intensify and increase the difficulty of meeting biopsychosocial needs such as housing, employment, and medical care after release from incarceration (Fig. 1, label 2). These include vulnerabilities predating incarceration; for example, individuals with DUDs may be more likely to come from under-resourced communities and to lack supportive relationships compared to those who do not have DUDs. These preexisting vulnerabilities intersect and compound with vulnerabilities associated with criminal legal involvement. For example, incarceration creates a need for finding new housing upon re-entry, but meeting this need may be impeded by social stigma and discrimination based on one's criminal record as well as ineligibility for public housing due to a drug felony conviction. The experience of trying to manage competing needs in the face of such obstacles is deeply stressful, contributing to frustration, depression, and hopelessness (Fig. 1, label 3). This emotional distress is frequently linked to a return to drug use and may contribute to riskier drug use behaviors (Fig. 1, label 4). Competing needs also create environmental conditions that foster greater risk. Thus, although adverse health outcomes such as overdose, suicide, and infectious disease acquisition are typically mediated by intrapersonal behaviors (e.g., drug use), this model elucidates how diverse re-entry needs interact with vulnerabilities at all levels of the socioecological framework to directly and indirectly increase the risk for adverse health outcomes (Fig. 1, label 5). Consistent with ecological models for health promotion [22], our model provides insight into a range of individual *and* social-environmental factors as targets for health promotion interventions to improve outcomes for formerly incarcerated people who use criminalized drugs.

Recommendations and directions for future research

Our review and conceptual model underscore the importance of interventions that address determinants of

post-release health at the individual level, in social and physical re-entry environments, and in policy to prevent adverse health outcomes. This must include support for meeting the many competing needs experienced by people with DUDs during the reentry period and must also address the criminal legal and DUD-related vulnerability factors that affect one's ability to meet these needs.

There are numerous effective and promising individual and structural interventions that can improve outcomes for people with DUDs leaving incarceration. Examples include opioid agonist medications, which significantly reduce the risk of overdose [97], and the Housing First model (supportive housing without sobriety requirements), which shows promise for reducing recidivism in criminal legal populations [128]. A recent guide from the Substance Abuse and Mental Health Administration (SAMHSA) [129] provides a summary of best practices and related recommendations for reentry support for people with SUDs and other mental health conditions. The guide identifies three types of interventions with the most empirical support for individuals with mental health diagnoses and/or SUD during reentry, including medication treatment (specifically for opioid and alcohol use disorders), case management, and peer and patient navigation. These interventions help address re-entry–related competing needs through active connection to treatment and social services. The SAMHSA guide provides recommendations regarding integrating various types of support for basic, relational, and health-related needs and emphasizes the importance of interventions such as overdose education and naloxone distribution that directly reduce adverse outcomes [129], aligning well with the conceptual model presented in this review. Notably, peer support can be an integral part of each of these intervention approaches and can be implemented throughout the continuum of criminal legal involvement [130], yet peer-delivered interventions are limited in many criminal legal settings by policy-related barriers (e.g., restrictions on employment or facility access for people with criminal records).

Our review also highlights how negative affect and emotion dysregulation play key mediating roles in the relationship between post-release competing needs and drug-related adverse outcomes and suggests a gap in research related to interventions specifically targeting this relationship. Indeed, there is a dearth of empirically supported psychosocial interventions targeting reentry stress, mental health symptoms, and substance use. A 2020 systematic review of reentry substance use interventions found that only seven of the 13 studies reporting substance use outcomes found reduced substance use on any indicator, and none of the treatment modalities assessed had consistently positive results [131]. Thus, there is a need for additional research developing and testing psychosocial interventions that target reentry stress (and associated mental health problems and negative affect) and illicit drug use. Given the high proportion of individuals with DUDs who use drugs after leaving incarceration, researchers should evaluate harm reduction-focused interventions that engage those with active use.

Finally, this review and conceptual model draw from the extant literature to suggest a causal pathway leading from unmet psychosocial needs to adverse health outcomes, partially mediated by negative affect which leads to drug use and other coping behaviors. There is a need for additional research examining these potential causal associations and identifying the intervention targets that are most likely to prevent adverse outcomes. This could include further examining how people with SUDs prioritize their needs during reentry, as well as the mental, emotional, and behavioral responses to competing needs. There is also a need for additional research testing integrated individual and social-ecological interventions (e.g., housing support plus SUD treatment; universal basic income plus harm reduction therapy) to identify the most efficacious combinations.

Conclusions

People leaving incarceration experience enormous challenges addressing competing biopsychosocial needs during community reentry. For individuals with DUDs, meeting these needs may be even more difficult due to overlapping vulnerabilities associated with both drug use and criminal legal involvement. Strong negative affect in response to the overwhelming task of meeting post-release needs can lead to post-release drug use and subsequent adverse health outcomes, and competing needs create environmental conditions that amplify risk. Interventions that address determinants of post-release health at the individual level, in social and physical environments, and in policy are needed to improve outcomes for those with DUDs.

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CP conceptualized the review, conducted literature searches, led the writing for the original draft, and conducted substantive review and editing. KP, MR, and TD helped conduct literature searches and contributed to writing, substantive review, and editing. KL and BC contributed to substantive review and editing. LBR assisted with conceptualization as well as substantive review and editing. All authors read and approve the final manuscript.

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