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# Social Determinants and the Health of Drug Users: Socioeconomic Status, Homelessness, and Incarceration

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SANDRO GALEA, MD, MPH  
DAVID VLAHOV, PhD

Dr. Galea is an epidemiologist at the Center for Urban Epidemiologic Studies, New York Academy of Medicine, and Dr. Vlahov is director of the Center. Both are also affiliated with the Division of Epidemiology, Columbia University Mailman School of Public Health, New York, New York.

## SYNOPSIS

**Objectives:** This article reviews the evidence on the adverse health consequences of low socioeconomic status, homelessness, and incarceration among drug users.

**Observations:** Social and economic factors shape risk behavior and the health of drug users. They affect health indirectly by shaping individual drug-use behavior; they affect health directly by affecting the availability of resources, access to social welfare systems, marginalization, and compliance with medication. Minority groups experience a disproportionately high level of the social factors that adversely affect health, factors that contribute to disparities in health among drug users.

**Conclusion:** Public health interventions aimed at improving the health of drug users must address the social factors that accompany and exacerbate the health consequences of illicit drug use.

Address correspondence to:

Sandro Galea, MD, MPH, Epidemiologist, Center for Urban Epidemiologic Studies, New York Academy of Medicine, 1216 Fifth Avenue, New York, NY, 10029-5293, tel 212-822-7378, fax 212-876-6220, e-mail <sgalea@nyam.org>.

## INTRODUCTION

Renewed interest in the persistent, and growing, health inequalities in the United States has resulted in new research and federal initiatives aimed at understanding and reducing disparities in health across racial and ethnic groups. Consistent with the Public Health Service's focus on health disparities, a National Institute on Drug Abuse initiative is considering the role of differential drug use and its consequences within and across racial and ethnic groups in the United States.

This article argues that social factors are determinants of the health of drug users and contribute to both differential drug use behavior and differential morbidity among drug users from different racial and ethnic groups. Implicit in this argument is that social factors associated with drug use are not consequences but rather circumstances that are inextricably intertwined with drug use patterns and shape the health of drug users. To illustrate this thesis, we focus on three social factors associated with health differentials among drug users: socioeconomic status (SES), homelessness, and incarceration. SES is often conceptualized as a root cause of health inequalities. Homelessness and incarceration are social circumstances that frequently co-occur with poor SES. They also independently contribute to adverse health outcomes among drug users.

We focus on the role of these three factors in shaping health disparities among drug users. Although we do not discuss how social factors also set the stage for disparities in health between drug users and nonusers, our observations about the role of social factors can guide thinking about why drug users have worse health outcomes in general. We focus our discussion on people who inject drugs, but, in light of the relative paucity of data specific to injection-drug users, we also refer to research about illicit drug users in general.

Although the prevalence of drug use in the general population is small, disparities in health among drug users contribute to larger population-level health disparities. Examination of the role social factors play in determining health disparities among users illustrates the role these same factors play in determining health disparities in the United States.

### SOCIAL DETERMINANTS OF THE HEALTH OF DRUG USERS AND OF HEALTH DISPARITIES ACROSS ETHNIC GROUPS

The universe of social factors has been referred to as the "social environment." The social environment

includes the contextual forces, norms, and social relationships within which individuals interact and function.<sup>1</sup> Features of the social environment such as social hierarchy (income distribution, workplace control), public policies (housing, education), cultural norms, and social relationships (social networks, discrimination) affect health and well-being. These social factors are increasingly referred to as "social determinants," to reflect their role in shaping both macro-level and individual-level risk factors and health outcomes.<sup>2</sup>

Several conceptual models describe the causal relationship between social and economic factors on the one hand and disease and individual well-being on the other.<sup>3-6</sup> Different models posit different pathways through which social determinants affect health, but all agree that specific social factors play a role in determining health, indirectly or directly, either detrimentally or protectively.<sup>7,8</sup> Some models suggest that SES (generally defined as the highest educational level, income, or employment) is a fundamental factor, determining power, prestige, and access to resources and underlying the relation between other social factors and health.<sup>5</sup>

The health of drug users is inextricably bound to their social environment. Drug-taking and drug-use risk behaviors are affected by social processes, and the health of drug users is a product of both drug-use behaviors and social determinants. Social determinants can directly shape health risk behaviors.<sup>9</sup> Homeless drug users, for example, are more likely to engage in high-risk sexual activity.<sup>10</sup> Social determinants can establish the living conditions and resources that indirectly exacerbate the consequences of drug use. For example, inadequate housing increases the likelihood of infectious disease transmission, social relationships offer protective financial and emotional resources, and more cohesive neighborhoods have a greater likelihood of providing appropriate care.

The role of social determinants is particularly relevant to the health of minority drug users. Minorities report levels of drug use similar to or lower than nonminorities.<sup>11</sup> But minorities, particularly socioeconomically disadvantaged minority drug users, experience a disproportionate number of health consequences from drug use.<sup>12,13</sup> This health disparity is apparent in the incidence of HIV and AIDS. Injection drug use is the second most common risk factor for HIV infection among men and women in the United States. The incidence of HIV and AIDS is growing, primarily among African Americans and Hispanics.<sup>14</sup> The incidence of AIDS among African Americans was

66 per 100,000 in 1999, more than twice the rate for Hispanic Americans and eight times the rate for whites.<sup>15</sup> Some 79% of new drug-related AIDS cases were among minority ethnic groups, and 67% of cumulative drug-related AIDS cases for women through 1999 were among African American and Hispanic American women.<sup>15</sup> Other adverse health outcomes associated with drug use also occur disproportionately among minorities. Drug overdose fatality rates are higher for minorities than for whites,<sup>16,17</sup> and the high rates of homicide for young African Americans and Hispanic Americans are likely due to involvement with drug use and the drug trade.<sup>18,19</sup>

Specific drug use patterns are associated with different levels of adverse health outcomes. Sharing needles, using speedballs, sharing cookers, and injecting in a shooting gallery are associated with higher risk of infectious disease transmission;<sup>20,21</sup> polydrug abuse and use of drugs in unfamiliar surroundings are associated with high drug-related mortality;<sup>22</sup> and risky sex behaviors by frequent drug users increase the infectious disease burden among injection-drug users (IDUs).<sup>23,24</sup>

Although these individual risk factors can explain some of the unequal burden of morbidity and mortality among racial and ethnic groups, risk behavior alone does not sufficiently explain these disparities. Although different injection practices may explain some of the higher seroprevalence of HIV among African Americans,<sup>25</sup> risk behaviors do not fully explain the disproportionate burden of HIV incidence African Americans bear. Research suggests that African American drug users have disproportionately high rates of HIV even after adjusting for drug use and other risk behaviors,<sup>20,26,27</sup> suggesting that factors other than individual-level drug-use behavior may be responsible for the differential rates of HIV across racial and ethnic groups of drug users.

Drug-use risk behavior itself is shaped by larger contextual factors. Studies of risk factors for HIV infection in IDUs have long suggested that differences in both behavior and the social setting of drug use are related to risks for HIV infection.<sup>28</sup> Models that predict drug-use behavior have also demonstrated that various other factors, including the location of drug use, are significant predictors of drug injection frequency.<sup>29</sup> Therefore, accounting only for individual-level risk behavior fails to fully explain the variability in HIV incidence among individuals.

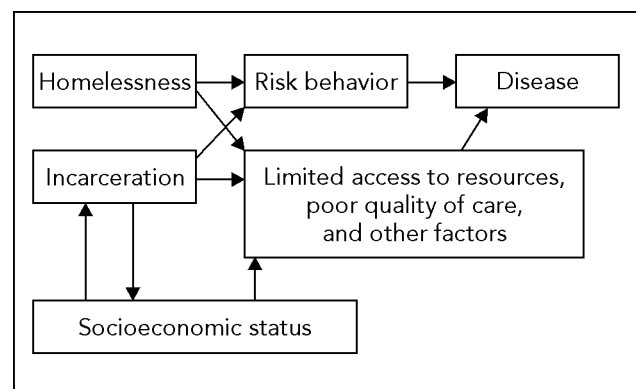
Poverty, scant and poorer quality resources, segregation, and discrimination (including racial profiling) are among the adverse social factors that

disproportionately affect many minority communities in the United States.<sup>30-32</sup> Since these factors are known to be associated with poorer health in the general population, it is plausible that the uneven concentration of these factors in certain ethnic groups of drug users also contributes to the disparities in health outcomes among those groups.

To illustrate the relationship between social determinants and adverse health outcomes for drug users, we examine SES, homelessness, and incarceration. Although homelessness and incarceration are frequently referred to as consequences of drug use, we consider them as social circumstances that are responsible for shaping health differentials among drug users. A simple model summarizing our conceptualization of the role of these social determinants in the health of drug users is provided in figure 1.

We discuss potential mechanisms through which these social factors likely affect the health of IDUs, specifically, drug-use risk behavior, access to social services and health resources, compliance with appropriate therapy, and social marginalization. Understanding the social determinants of these outcomes could help guide public health interventions.

**Socioeconomic Status.** SES is a fundamental cause of disease.<sup>5</sup> It also affects other social factors, such as access to resources or discrimination.<sup>33</sup> Numerous studies have shown the existence of a social gradient, in which rates of morbidity and mortality decrease directly and proportionately with each increase in level of income or education.<sup>2,34</sup> Evidence shows an association between occupational status and heart disease mortality,<sup>35</sup>



**Figure 1. Conceptual model of the relationships between socioeconomic status, homelessness, and incarceration and the health of illicit drug users**

Note: The model has been simplified to illustrate only the social factors discussed in this article.

educational status and disease prevalence,<sup>34</sup> and income and all causes of mortality.<sup>36</sup>

The association between poor socioeconomic conditions, multiple health risks, and greater morbidity and mortality among drug users is suggested by several ecologic studies.<sup>37-39</sup> An association between neighborhood-level SES and AIDS survival among drug users has also been shown.<sup>40</sup> SES may play a role in determining high-risk behaviors that are immediately linked to poor health as well as in shaping access to health care, the quality of health care received, behavioral norms, and preventive behavior of drug users.

Data describing the role of SES among drug users are sparse, and they inadequately measure the social standing of drug users. Nevertheless, the data do show that differences in SES are associated with differential health outcomes among drug users, not merely as a potential confounder for individual risk factors but also as a social determinant that contributes to the health status of this group. Although illicit drugs are used by people in all strata of SES,<sup>41</sup> drug-related morbidity and mortality are disproportionately higher among lower SES groups.<sup>33,42,43</sup>

The relationships among SES, ethnicity, drug use, and health are complex. A multistate surveillance project found that among IDUs, 35% of white men, 64% of black men, and 67% of Puerto Rican men had not completed 12 years of school overall.<sup>44</sup> Other research has corroborated a high prevalence of school dropout status among Puerto Rican IDUs.<sup>45</sup> School dropout status and early misbehavior in turn have been associated with higher likelihood of injection-drug use,<sup>46-48</sup> and limited economic opportunity has been associated with risky sexual practices among drug users.<sup>49</sup>

Inferences about a role for SES in HIV prevalences can be made from two studies. Data from a five-city study conducted in 1987-91 found variations in injection risk behaviors and overall HIV risk among drug users. African Americans were at higher than average risk for HIV in four cities, while Puerto Ricans faced higher risk in two cities.<sup>50</sup> The same study documented increased risk for HIV among these minorities independent of risk behavior. Factors other than the risky injection practices thus appear to contribute to the risk for HIV.

A study of risk behavior in four Ohio cities comparing African American and white IDUs showed significant differences between the two groups for drug use prevalence, risky injection behavior, and treatment frequency.<sup>51</sup> These differences in risk behaviors in four

cities in relatively close geographic proximity may indicate a role for SES factors in the health of IDUs.

Factors that may affect access to health care, including minority status, low educational attainment, and injection drug use, have been shown to contribute to differences in health status among people with HIV.<sup>52</sup> IDUs have a greater need for treatment and are less likely to receive needed treatment than are non-users.<sup>53,54</sup> IDUs who are HIV-positive have higher rates of emergency room visits (compared with outpatient clinic and physician visits) than non-IDU HIV-positive patients; that is, they rely more on ad hoc disease management.<sup>55</sup>

Factors such as poor access to risk-reduction information and differences in quality of information received may play a role in stratifying health risk within groups of IDUs.<sup>52</sup> The poor level of education among IDUs<sup>56</sup> may, in part, be responsible for poor knowledge about disease and the risks for diseases among IDUs as a group.<sup>57,58</sup> Poorer quality communication between clinicians and low-income patients regarding end-stage AIDS and care has been observed<sup>59</sup> and may apply to IDUs.

IDUs do not receive appropriate preventive care,<sup>60</sup> have limited access to medical care,<sup>61</sup> and frequently receive substandard medical care.<sup>62,63</sup> A Baltimore study based on self-report conducted in 1996-97 found that 49% of IDUs had received no antiretroviral therapy and that only 14% had received the recommended triple-combination therapy with a protease inhibitor.<sup>64</sup> These differences in care reflect socioeconomic disparities. Low SES drug users are also less likely than drug users with higher SES to engage in appropriate preventive behavior, and they are more likely to focus on immediate risks in their lives, including poverty and joblessness.<sup>65</sup> Together this body of research suggests that factors beyond the immediate individual risk behaviors play a role in the health disparities documented among IDUs of different socioeconomic levels.<sup>51</sup>

**Homelessness.** Homelessness has been a significant public health concern in North America for the past 20 years. Broad social processes, such as changes in economic opportunities, and institutional factors, such as fragmentation of social services, have been associated with a rise in prevalence and incidence of homelessness during the past two decades in the United States.<sup>66-69</sup> In a national representative survey, 7% of respondents said that they had been homeless at some point in their lives.<sup>70</sup> It has been estimated that half a million Americans are living in shelters or are without shelter at any given time.<sup>71</sup> In the general population,

homelessness has been associated with high levels of all-cause mortality, mental health disorders, and prevalence of infectious disease such as tuberculosis.<sup>72-74</sup>

IDUs make up a significant proportion of the homeless in the United States; 10%-20% of homeless people are estimated to abuse drugs,<sup>75,76</sup> with estimates of lifetime prevalence of 25%-50%.<sup>77</sup> It is difficult to determine the extent to which drug use causes homelessness. One-quarter of homeless people in a New Haven, Connecticut, survey identified drug use as the primary reason for their homelessness.<sup>78</sup>

Illicit drug use is a significant risk for poor health and high-risk behavior among homeless adults.<sup>79-83</sup> Injection drug use increases the likelihood of death among homeless adults.<sup>72</sup> The experience of homelessness itself is associated with higher rates of HIV infection, exposure to hepatitis B,<sup>84,85</sup> and poor mental health<sup>86</sup> among IDUs. In one prospective study, 42% of IDUs who remained HIV-negative over the course of the 10-year study reported a history of homelessness; 59% of participants who seroconverted during the study reported homelessness.<sup>87</sup>

Homelessness likely influences the well-being of IDUs because of their high-risk behavior, inadequate access to medical care, and failure to comply with treatment regimens. Homeless people are poor; tend to practice few, if any, risk-reduction behaviors; and tend to engage in high-risk behaviors, such as trading sex for drugs and money and<sup>88,89</sup> engaging in high-risk sex.<sup>90</sup> Homeless IDUs are more likely than IDUs who are not homeless to be young and to be arrested.<sup>10</sup> Lack of appropriate living arrangements has also been associated with high prevalence of risk behaviors by women.<sup>91</sup> Mental illness, high among the homeless,<sup>90</sup> compounds high-risk drug-use behavior by homeless IDUs<sup>73,86</sup> and by drug users with few socioeconomic resources.<sup>92</sup> High frequency of drug injection and use of crack are predictors of HIV infection in homeless IDUs. These HIV risk behaviors are associated with the severity of homeless circumstances, perhaps indicating a dose-response relationship.<sup>93</sup>

In conjunction with greater high-risk sexual and drug-use behavior, homeless IDUs also face risks to well-being that relate directly to the state of homelessness itself. Cohabitation in overcrowded homeless shelters increases the risk of airborne infections, such as tuberculosis.<sup>94</sup> The loss of social support is associated with low compliance with medication.<sup>95,96</sup> Noncompliance with tuberculosis therapy is, in turn, associated with a 10-fold increase in poor outcomes from treatment and contributes to treatment failures.<sup>97</sup> Injection drug use behavior has

been particularly implicated in tuberculosis infection in women.<sup>74</sup>

Homelessness also limits users' access to appropriate drug treatment. In general, regular attendance at a drug treatment program is associated with significant reductions in drug use.<sup>98,99</sup> Homeless IDUs are not likely to have medical insurance, which limits their access to medical care.<sup>100</sup> For example, methadone maintenance treatment programs are a primary method for reducing drug-use risk behavior and morbidity among IDUs.<sup>101</sup> Consistent use of methadone maintenance treatment has been associated with more appropriate use of antiretroviral therapy and significantly lower inpatient expenditures related to drug use.<sup>102,103</sup> Enrollment in methadone programs is inversely associated with homelessness and recent incarceration.<sup>104</sup>

**Incarceration.** The number of inmates in the U.S. correctional system has increased from less than 500,000 in 1980 to roughly 1.9 million in 1999, with a 5.7% average annual increase between 1990 and 1999.<sup>105</sup> Inmates are overwhelmingly ethnic minorities (54% are African American or Hispanic).<sup>106</sup> The high increase in the jail and prison population is partly due to a nationwide public policy of mandatory sentencing for drug offenders.<sup>107</sup> The incarceration rate for drug offenders increased from 15 to 148 per 100,000 adults from 1980 to 1996.<sup>108</sup>

The percentages of drug offenders in both state and federal correctional facilities have increased substantially. In 1980 drug offenders accounted for 6% of inmates in state and 25% of inmates in federal correctional facilities. These figures rose to 20% and 46% in 1999-2000.<sup>109</sup> Precise estimates of the proportion of IDUs among prison inmates are difficult to obtain. Analyses of several surveys estimate that one-third to two-thirds of inmates had previously used injection drugs<sup>110-114</sup> and that most continue to do so while incarcerated.<sup>115,116</sup> The growing number of drug users in the U.S. prison system suggests that incarceration is an increasingly important social factor resulting from drug-use behavior, which in turn affects the well-being of IDUs.

Incarceration is a particularly difficult social circumstance for drug users. Incarceration is associated with other social factors related to poor health (particularly SES) and also presents direct threats to the health of drug users. Prisons can benefit inmates by offering access to diagnosis and treatment, but they concentrate people, which heightens risk behavior and thus the transmission of infectious diseases. In addition,

the common cycle of incarceration–release and reentry—particularly among people of lower SES, increases morbidity and mortality for incarcerated drug users.

The prevalences of infectious diseases, such as HIV infection, sexually transmitted diseases, hepatitis B and C, and tuberculosis, are higher in the correctional population than in the U.S. population at large.<sup>117-121</sup> Reported HIV rates in prisons are higher among women, ethnic minorities, and IDUs.<sup>122-23</sup> Among IDUs a history of arrest often coincides with low SES<sup>110,114</sup> and a history of homelessness,<sup>124</sup> further compounding their risks for disease. A survey of 1,405 subjects in Baltimore found that a previous arrest was twice as likely for IDUs with less than an 11th grade education than for IDUs with at least an 11th grade education and 1.5 times more likely for IDUs with more than 1 year of unemployment in the past 10 years than those with less than 1 year of unemployment.<sup>125</sup>

Prisons are high-risk environments in which high-risk behaviors are prevalent. Incarceration directly and indirectly affects risk behavior of inmates and contributes to poorer health for IDUs who have been in prison. Incarceration likely affects the well-being of IDUs because of their changes in risky behaviors and through the cycle of incarceration, which limits IDUs' access to health resources.

Injection drug-use rates for prisoners are about 20 times higher than for the general population.<sup>110,115</sup> One study showed that for every year of imprisonment the risk of injection-drug use in prison increased by about 17%.<sup>116</sup> In another study, 73% of inmates who were injecting drugs reported having shared needles while in prison.<sup>115</sup> Another analysis showed that women inmates who were IDUs reported needle-sharing (62%) more often than male IDU inmates (43%).<sup>126</sup> Risky sex is also higher among incarcerated IDUs,<sup>127,128</sup> with a high prevalence of anal sex and unprotected intercourse.<sup>126,129</sup>

Surveys of prisoners show that a significant risk factor for HIV infection is prior incarceration, suggesting that people who cycle through the prison system add to the burden of disease both inside and outside the prison environment.<sup>130</sup> A study of IDUs in Greek prisons showed that inmates with previous drug-related convictions were twice as likely as those without previous drug-related convictions to inject drugs in prison.<sup>116</sup>

Limited availability of primary prevention resources (such as condoms and bleach), poor medical screening at admission, and limited ongoing mental health services are barriers to public health interventions.<sup>131,132</sup>

The consequence of the high turnover rate is that many inmates are likely to return to their previous high-risk environments, which are conducive to continued spread of disease and introduction of new high-risk behaviors.<sup>133</sup> Limited availability of housing, benefit programs, and preventive and treatment services in these former inmates' communities compounds their health problems.<sup>134</sup> Incarceration is thus a risk for disease amplification both within prisons and in the communities that inmates come from and go to.

Few conclusive studies have been conducted on the risks faced by IDUs immediately after release from prison. One study showed a high likelihood of drug-related death immediately after prison release. Another found that mortality of former prisoners during the first year after release was four times the age-adjusted rate in the general population.<sup>135</sup> Another study found that mortality from overdose was 7 times higher in the first 2 weeks after release than in the next 10 weeks.<sup>136</sup> The likely factors associated with this high mortality include loss of tolerance to opiates while in prison, psychological stress associated with re-entry into the community, and the increased opportunity for drug use and other high-risk behavior.

## DISCUSSION

Illicit drug use is a high-risk behavior associated with immediate and long-term health consequences. While individual risk factors are certainly associated with health outcomes, social factors are determinants of both risky drug-use behavior and the health consequences of drug use. These social determinants, including SES, homelessness, and incarceration, frequently coincide and interact to the detriment of IDUs' health. Other social determinants,<sup>7</sup> such as discrimination,<sup>137</sup> instrumental social support,<sup>138</sup> and residential segregation,<sup>139</sup> also affect the health of drug users, through various mechanisms, including disinvestment in human and social resources. These social factors also play a significant role in creating health differentials between drug users and the general population. Research on the role of these factors in determining the health of drug users—particularly research exploring the mechanisms that explain these associations—is sparse.

Much research on the health of drug users represents either a physiologic or medical inquiry into the link between drug use and health outcomes<sup>140,141</sup> or behavioral research on drug users' risk behavior and health outcomes.<sup>142</sup> Behavioral research fits a traditional epidemiologic risk factor model. Although this work

has guided public health interventions and some has been successful in reducing the burden of disease among IDUs,<sup>143</sup> it does not recognize the fundamental social circumstances that shape behavior and ultimately influence the health of drug users. Underspecification of the range of factors associated with risk behaviors and health outcomes can bias epidemiologic inquiry<sup>144</sup> and limit the potential scope of successful interventions.

As long as socioeconomic disadvantage remains concentrated among specific ethnic groups in the United States, there exists a strong imperative for improved research on, and intervention for, these social determinants. Research on the mechanisms of action of social determinants is particularly important for public health practice. For example, while recognizing that incarcerated IDUs have poor health outcomes is useful, understanding that conditions at the time of prison discharge might be a key mechanism through which incarceration affects health suggests avenues for intervention.

The U.S. policy of using sanctions to discourage people from using drugs marginalizes people of lower SES who live in poor neighborhoods, are homeless, or have been in jail, exacerbating public health problems. Providing education and information to people to change individual behaviors is a necessary but insufficient response. Public health interventions aimed at affecting individual risk behavior or the immediate risk to drug users' health are bound to fall short. A full spectrum of interventions encompassing macro-level considerations (such as policy change to increase economic opportunity and decrease homelessness) and individual-level factors (such as those targeted by many behavioral interventions) should be considered in order to fully address the determinants of disease among drug users.

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