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Health Disparities and the Criminal Justice System: An Agenda for Further Research and Action

Ingrid A. Binswanger, Nicole Redmond, John F. Steiner, and LeRoi S. Hicks

ABSTRACT *Although racial and ethnic minorities are more likely to be involved with the criminal justice system than whites in the USA, critical scientific gaps exist in our understanding of the relationship between the criminal justice system and the persistence of racial/ethnic health disparities. Individuals engaged with the criminal justice system are at risk for poor health outcomes. Furthermore, criminal justice involvement may have direct or indirect effects on health and health care. Racial/ethnic health disparities may be exacerbated or mitigated at several stages of the criminal justice system. Understanding and addressing the health of individuals involved in the criminal justice system is one component of a comprehensive strategy to reduce population health disparities and improve the health of our urban communities.*

KEYWORDS *Prisons, Health disparities, Health care delivery*

INTRODUCTION

Extensive literature has documented racial and ethnic differences and disparities across the continuum of medical care in disease prevalence, prevention, management, and outcomes,[1–5] but little is known about how these population health disparities relate to the criminal justice system. In general, racial and ethnic minority groups, including African-Americans, Latinos, and American Indians, receive poorer care and have worse outcomes than non-Hispanic whites. They also experience more criminal justice involvement than whites. Epidemiologic studies have confirmed that jail and prison inmates have a higher burden of chronic diseases such as hypertension, asthma, and cervical cancer than the general population, even

Binswanger is with the Division of General Internal Medicine, Department of Medicine and the Division of Substance Dependence, Department of Psychiatry, University of Colorado School of Medicine Center, Aurora, CO, USA; Binswanger is with the Community Health Services, Denver Health Medical Center, Denver, CO, USA; Redmond is with the Division of Preventive Medicine, University of Alabama-Birmingham, Birmingham, AL, USA; Redmond is with the Divisions of General Medicine and Primary Care and Medical Communication, Brigham and Women's Hospital, Boston, MA, USA; Redmond is with the Department of Medicine, Harvard Medical School, Boston, MA, USA; Steiner is with the Institute for Health Research, Kaiser Permanente, Denver, CO, USA; Hicks is with the Division of Hospital Medicine, University of Massachusetts Medical Center, Worcester, MA, USA; Hicks is with the Division of General Internal Medicine, Brigham and Women's Hospital, Boston, MA, USA; Hicks is with the Department of Health Care Policy, Harvard Medical School, Boston, MA, USA; Binswanger is with the Division of General Internal Medicine, University of Colorado School of Medicine, Aurora, CO, USA.

Correspondence: Ingrid A. Binswanger, Division of General Internal Medicine, University of Colorado School of Medicine, Aurora, CO, USA. (E-mail: Ingrid.Binswanger@ucdenver.edu)

after adjustment for known confounders such as age.[6–12] Furthermore, inmates are particularly at risk for substance use disorders, psychiatric disorders, victimization, and infectious diseases, including hepatitis C, HIV, and tuberculosis.[8,9,13–21] Despite the prevalence of poor health status among both minorities and inmates, the effect of criminal justice involvement on population health disparities has been largely overlooked in research on population health disparities.

The criminal justice system includes a large and high-disparity population. Over seven million people in the USA were under the supervision of the criminal justice system in 2008, including individuals incarcerated in prisons and jails and those on probation or parole.[22] However, these numbers only reflect the population under supervision at a given point in time during the year. There is tremendous flux through the correctional system, with 23.9 million people handled by the criminal justice system a year, of which 15.9 million were handled by the prison and jail system (may not represent unique individuals).[23] Racial and ethnic disparities in incarceration rates are striking. An estimated 33% of African-American men will serve time in prison during their lifetimes, in contrast to 17% of Latino men and 6% of white men.[24] Over 3,000 per 100,000 African-American men were in prison at year-end 2008, in contrast to 1,200 Latino men and 487 white men per 100,000.[25] African-American and Latino women, American Indians, and Alaska Natives are also disproportionately likely to be incarcerated.[24,26] Despite the large scale and health care costs associated with the criminal justice system,[27,28] the potential of this system to either mitigate or exacerbate health disparities is not yet fully understood.

Criminal justice involvement may be associated with health outcomes through direct or indirect effects. Because individuals engaged with the criminal justice system are already at risk for poor health outcomes,[25] the health screening and care provided by jails and prisons could have an important impact on racial/ethnic health care disparities. While jails and prisons may provide access to care due to constitutional mandate, the quality of care in correctional facilities is variable and has been poorly measured. Probationers and parolees, who represent the largest proportion of criminal justice involved populations, suffer from inadequate access to care[29] and risk deterioration in health status and death.[30,31] The health status of parolees and probationers is particularly important now that states are attempting to reduce budgets through early release and diversion programs from prisons. Increasing numbers of inmates are being released into their home communities,[32] where they may not have access to health care.

Individuals involved in the criminal justice system often experience multiple health care transitions. An individual with diabetes placed on chronic medications by their community physician can be detained in a jail upon arrest, after which they may transition to a prison, transferred to another facility, released to a half-way house, and discharged back to the community on parole, while remaining at risk for re-incarceration. In each new setting, a new medical provider should continue the individual's diabetes medications and obtain medical records to ensure adequate continuity of care. Each of these medical transitions involves a complex system of information transfer process which poses risk to the patient, as shown by data on the poor adherence to HIV medications after release from prison.[33] While transitions in care are problematic in the non-incarcerated population, they are likely to have exaggerated effects in the criminal justice system due to poor transfer of medical, laboratory and pharmacy records, poor communication among providers, variable access to care, limited family involvement, and inability to afford treatment.

In addition to health effects on criminal justice involved individuals, the system is likely to impact the health of families and communities, predominantly in urban areas.[34–37]

Iguchi and colleagues described the adverse effects of criminalization of drug users on health through decreased access to health benefits, housing, and employment, as well as subsequent impacts on families and communities.[38] In 2001, Freudenberg extensively reviewed the mechanisms by which the criminal justice system adversely impacted health in urban communities.[34] Notably, over 2% of the nation's population under the age of 18 and 6.7% of African-American children had a parent in prison at year-end 2007.[39] Rates of sexually transmitted diseases and teenage pregnancy have been shown to be associated with community incarceration rates.[35] Urban neighborhoods whose inhabitants have high rates of incarceration and many returning inmates[40] experience a phenomenon similar to "forced migration" which disrupts social, family, and sexual networks and has secondary effects on the health of the community.[36] For instance, community members find new sexual partners when prior partners go to prison. Former inmates may have multiple partners on return to the community after release, putting themselves and others at risk for acquiring HIV.[35]

Despite these potentially detrimental effects of criminal justice involvement, interventions with criminal justice involved populations could play a pivotal role in the identification and reduction of racial/ethnic disparities in health care and outcomes. Alternatively, if the health problems of individuals in the criminal justice system are neglected, disparities could be perpetuated or worsened. We examine the interplay of criminal justice involvement and racial and ethnic health disparities and propose an agenda for research and action on health disparities related to the criminal justice system.

PATHWAYS TO DISPARITIES: HOW THE CRIMINAL JUSTICE SYSTEM COULD AFFECT HEALTH

There are several potential models for the relationship between criminal justice involvement and health outcomes. These models have varying levels of intuitive appeal but limited data to support one over the other. The first of these models involves a *causal* link between incarceration and health outcomes that is *independent* of race and ethnicity. In this model, criminal justice involvement may have an equivalent effect on health outcomes across racial and ethnic groups, but the effects of this association (whether beneficial or harmful) will be disproportionately borne by African-Americans and Latinos since they are more likely to be incarcerated than non-Latino whites. This model suggests that adjusting for exposure to the criminal justice system (e.g., length or frequency of incarceration) would reduce observed racial and ethnic differences in health outcomes. The causal relationship of incarceration on health has been examined in relation to hypertension,[41] asthma,[42] self-reported "stress-related" disease,[43] general health functioning,[44] and functional limitations.[45] Data demonstrating that adjustment for race and age does not eliminate the higher odds of hypertension among jail and prison inmates compared with the general population support this model.[6]

In an alternate model, criminal justice involvement is causally related to health outcomes *and* has a differential effect among racial and ethnic groups.[6,31,46] For a hypothetical example, consider that healthcare screening and treatment of hypertension in correctional settings is poor and it differs by the race of inmates. If management of hypertension is worse for inmates than non-inmates and it is even worse for incarcerated African-Americans than whites, pre-existing racial disparities in hypertension management and related outcomes would be exacerbated by incarceration. This would suggest that race/ethnicity is an effect modifier in the relationship between criminal justice involvement and health outcomes. This model is based on the

assumption that the correctional health care system is subject to the same disparities in health care delivery that afflict the health care system at large. Alternatively, if health care delivery does not differ by race/ethnicity among criminal justice populations and if access to beneficial health care services increases with incarceration, access to care during incarceration could reduce population health disparities and equalize observed racial/ethnic differences.

Another model involves *no causal relationship* between incarceration and health. In this model, factors that both predispose individuals to poor health outcomes would also predispose to disproportionate exposure to the criminal justice system (e.g., poor education, neighborhood of origin, exposure to violence). Racial and ethnic differences in arrest, conviction, and sentences are well established.[47,48] Disproportionate exposure to the criminal justice system may be due to racism, drug policies, socioeconomic background, neighborhood, and differential access to legal aid.[37,49–51] Many of these factors also impact health outcomes. In this model, racial and ethnic differences in health may be a by-product of the closely linked conditions that lead to incarceration rather than actual exposure to the criminal justice system itself. Furthermore, in this context, health service delivery to criminal justice populations has a negligible effect on health outcomes.

To date, limited conceptual and validation work has been done on models for the translation of disparities in incarceration rates to population health disparities.[37,44] Validation of possible models through testing of specific hypotheses about the pathways by which criminal justice system involvement relates to race, ethnicity, health outcomes, and health disparities is necessary to understand the mechanisms of possible effects.

The system of health care in correctional settings differs from that in the general population, affecting health care processes and outcomes, with effects dependent on the length of incarceration and the quality of care provided in correctional facilities. The Gomes and McGuire model[1] can help guide the examination of health disparities in the criminal justice context. There are differences between the criminal justice system and the community in (1) the operation of health care systems (e.g., accessibility and quality of health care, poor continuity), (2) the legal and regulatory climate (e.g., loss of publicly funded insurance, such as Medicaid), and (3) discrimination and stigma (e.g., limited housing and employment opportunities). These themes may also be examined in light of racial and ethnic differences within criminal justice populations. The effects of institutional exposure on long-term stress, diet and activity, sexual and physical assault, infectious diseases (e.g., tuberculosis, HIV, and hepatitis C), and loss of self-efficacy also require further investigation.

THE CRIMINAL JUSTICE SYSTEM AS AN OPPORTUNITY TO DECREASE HEALTH DISPARITIES

Many scholars, scientists, and public health officials have called for improving public health through programs in the criminal justice system, for instance through expanded HIV and hepatitis C screening, hepatitis B vaccination, and effective treatment of substance use disorders.[52,53] Whether or not criminal justice involvement exacerbates disparities in health outcomes, opportunities may exist to mitigate health disparities at four points along the criminal justice continuum: (1) entry into the correctional system, (2) during custody, (3) in the transition from prison to the community, and (4) during subsequent community supervision, such as parole and

probation. At entry into the correctional system, health providers may provide evidence-based health screening based on both standard recommendations (e.g., hypertension, hypercholesterolemia) and for specific issues of high prevalence/concern in minority or incarcerated populations (e.g., tuberculosis, HIV, hepatitis C). At the time of release, coordination of correctional and community health services, improved access to care, and timely reinstatement of insurance could lead to reductions in the risk of death associated with release from prison[12,31,46] and improved adherence to prescription medications.[33] Community supervision environments could be targeted for health screening programs and follow-up of health issues identified during incarceration. The National Institutes of Health, the Centers for Disease Control and Prevention, individual correctional systems, and foundations have supported efforts to take advantage of these public health opportunities.

KNOWLEDGE GAPS AND RESEARCH OPPORTUNITIES

Studies on inmate health have focused on disease prevalence[7–9] and mortality,[10–12,31] in contrast to health screening and services. Correctional populations have been excluded from large, national health surveys, such as the National Health Interview Survey and the Behavioral Risk Factor Surveillance Survey. The Bureau of Justice Statistics includes some health-related questions in their surveys of jail and prison inmates[15] and is working to standardize questions with other national health surveys. Studies comparing inmates and the general population have been challenged by a lack of comparable data across populations and by the lack of detailed data to adequately account for potential confounders.[7,31,54] The systematic exclusion of inmates from large epidemiological studies could lead to under-estimation of the prevalence of conditions such as HIV found more commonly in African-American and Latino men, who are underrepresented in health research[55,56] but over-represented in the criminal justice system. Thus, the exclusion of inmates from broader health research may decrease the accuracy of population health statistics and measurement of population health disparities, as described in work by Edlin and Carden for hepatitis C.[57]

Most literature documenting the existence of racial and ethnic health disparities has been derived from non-institutionalized participants and has not measured whether participants have had criminal justice exposure. Measuring criminal justice exposure among non-institutionalized cohorts may provide insight into the role of the criminal justice system in health disparities.

Health data within correctional systems are only available, with difficulty, through the many independent local, state, and federal entities with divergent organizational structure, information technology, and health services.[58,59] There is no uniform process for the collection of health information on this population across the criminal justice continuum. Research has been limited by some of the same factors impeding research in other health systems: paper medical charts, ethics and privacy concerns, complex approval processes that arise because prisoners are recognized as a vulnerable population, administrative barriers, and lack of coordination across health systems.[58,60,61] Basic descriptive and analytic information is lacking on the validity of self-report, the extent of social desirability bias in reporting of health behaviors by criminal justice populations, and accuracy or completeness of prison medical records.

Substantial knowledge gaps exist in measurement of individual history of criminal justice exposure in medical research (e.g., duration of incarceration,

number of incarcerations, and time on probation and/or parole), handling potential confounding by factors related both to health and to criminal justice involvement, and understanding the mechanisms by which exposure to the criminal justice system may affect a range of health outcomes and health disparities. Little is known about differential effects of the types of exposure by race and ethnicity, the amount of exposure, and synergy with other potential risk factors. There is a dearth of knowledge about the secondary health effects of the criminal justice system on the health of children, families, and urban communities. A greater understanding of the relationship between the criminal justice system, race/ethnicity, health outcomes, and health disparities is critical to the design of effective interventions and policies to reduce health disparities. Research funders and policy makers should continue to develop opportunities for researchers to examine the science of criminal justice involvement, population health disparities, and community health.

To address some of the measurement concerns in research on health disparities and the criminal justice system, we recommend:

1. Including criminal justice populations in national health surveys
2. Coordinating surveys conducted in correctional facilities with those conducted among non-institutionalized populations to allow comparisons across varying criminal justice settings and with the general population
3. Including measures of exposure to criminal justice system in other studies of health and health disparities
4. Increasing the availability of clinical data on inmates for research purposes
5. Improving data sharing from correctional to community health practitioners
6. Examining the effect of specific criminal justice and fiscal policies on health
7. Testing interventions to improve health and reduce health disparities at each stage of criminal justice involvement

OPPORTUNITIES

Inmates are a population at risk for health disparities, but criminal justice involvement also provides an opportunity to improve health. Taking advantage of the opportunity provided by incarceration has typically been justified by its societal and public health benefits such as reducing the spread of infectious disease,[53,62] improving public safety,[40,59,63] and controlling costs.[64] In a health disparities context, health interventions among criminal justice populations could also reduce disparities within criminal justice populations and urban communities highly impacted by incarceration.

Incarceration can be an opportunity to screen, prevent, and treat conditions that are disproportionately common in African-Americans and Latinos, such as HIV and hypertension. Some of these screening efforts may be cost-saving from a societal perspective.[64] Similar opportunities may exist in community settings, such as parole and probation offices and community health centers. Health care for the largest segment of the criminal justice population, namely probationers and former inmates, generally occurs in urban, community-based settings.[65]

Coordination of efforts between correctional and community settings is essential, since financial constraints in correctional settings can limit the provision of preventive care, particularly if the benefit is accrued in the community following release. This arena of health care financing warrants further research. Problems with

coordination are perpetuated by federal policies for health care financing, which prohibit correctional institutions from receiving federal Medicaid or Medicare reimbursement for health services provided to prisoners. As a result, the costs of care are borne by taxpayers in the jurisdiction typically through separate funding streams. To take advantage of correctional settings to provide care that reduces disparities, the financing of correctional health care should be evaluated in a health policy context. Furthermore, criminal justice policies should be assessed in the context of their impact on public health and health disparities. Legal policies that promote the disproportionate incarceration of African-Americans and Latinos should be considered in terms of their downstream impact on health disparities. Further research on the interplay between the criminal justice and health disparities may inform sound health, fiscal, and legal policies. Finally, a research agenda to address the health of individuals involved in the criminal justice system should be included in comprehensive strategies to reduce population health disparities.

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REFERENCES

1. Smedley BD, Stith AY, Nelson AR, Institute of Medicine (U.S.), Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. Washington, DC: National Academies; 2003.
2. Groman R, Ginsburg J. Racial and ethnic disparities in health care: a position paper of the American College of Physicians. *Ann Intern Med*. 2004; 141(3): 226–232.
3. Wong MD, Shapiro MF, Boscardin WJ, Ettner SL. Contribution of major diseases to disparities in mortality. *N Engl J Med*. 2002; 347(20): 1585–1592.
4. Adler NE, Newman K. Socioeconomic disparities in health: pathways and policies. *Health Aff (Millwood)*. 2002; 21(2): 60–76.
5. Adler NE, Rehkopf DH. U.S. disparities in health: descriptions, causes, and mechanisms. *Annu Rev Public Health*. 2008; 29: 235–252.
6. Binswanger IA, Krueger PM, Steiner JF. Prevalence of chronic medical conditions among jail and prison inmates in the USA compared with the general population. *J Epidemiol Community Health*. 2009; 63(11): 912–919.
7. Wilper AP, Woolhandler S, Boyd JW, et al. The health and health care of US prisoners: results of a nationwide survey. *Am J Public Health*. 2009; 99: 666–672.

8. Baillargeon J, Black SA, Pulvino J, Dunn K. The disease profile of Texas prison inmates. *Ann Epidemiol*. 2000; 10(2): 74–80.
9. Solomon L, Flynn C, Muck K, Vertefeuille J. Prevalence of HIV, syphilis, hepatitis B, and hepatitis C among entrants to Maryland correctional facilities. *J Urban Health*. 2004; 81 (1): 25–37.
10. Coffey C, Veit F, Wolfe R, Cini E, Patton GC. Mortality in young offenders: retrospective cohort study. *BMJ*. 2003; 326(7398): 1064.
11. Bird SM, Hutchinson SJ. Male drugs-related deaths in the fortnight after release from prison: Scotland, 1996–99. *Addiction*. 2003; 98(2): 185–190.
12. Farrell M, Marsden J. Acute risk of drug-related death among newly released prisoners in England and Wales. *Addiction*. 2008; 103(2): 251–255.
13. National Commission on Correctional Health Care. *The Health Status of Soon-to-be-Released Inmates*. Chicago: National Commission on Correctional Health Care; 2002.
14. Karberg JC, James DJ. *Bureau of Justice Statistics Special Report: Substance Dependence, Abuse, and Treatment of Jail Inmates*. Washington, DC: US Department of Justice; 2005. NCJ 209588.
15. Maruschak L. *Bureau of Justice Statistics Special Report: Medical Problems of Jail Inmates*. Washington, DC: U.S. Department of Justice; 2006.
16. Messina N, Grella C. Childhood trauma and women's health outcomes in a California prison population. *Am J Public Health*. 2006; 96(10): 1842–1848.
17. Baillargeon J, Black SA, Leach CT, et al. The infectious disease profile of Texas prison inmates. *Prev Med*. 2004; 38(5): 607–612.
18. Baillargeon J, Wu H, Kelley MJ, Grady J, Linthicum L, Dunn K. Hepatitis C seroprevalence among newly incarcerated inmates in the Texas correctional system. *Public Health*. 2003; 117(1): 43–48.
19. Abram KM, Teplin LA, Charles DR, Longworth SL, McClelland GM, Dulcan MK. Posttraumatic stress disorder and trauma in youth in juvenile detention. *Arch Gen Psychiatry*. 2004; 61(4): 403–410.
20. Cropsey K, Eldridge GD, Ladner T. Smoking among female prisoners: an ignored public health epidemic. *Addict Behav*. 2004; 29(2): 425–431.
21. Hammett TM. HIV/AIDS and other infectious diseases among correctional inmates: transmission, burden, and an appropriate response. *Am J Public Health*. 2006; 96(6): 974–978.
22. U.S. Department of Justice. Bureau of Justice Statistics, total correctional population. December 6, 2010. Available at: http://bjs.ojp.usdoj.gov/index.cfm?ty=tp&tid=11. Accessed on: December 6, 2010.
23. Sabol WJ. Demographics of the correctional population and implications for correctional health care. *Academic and Health Policy Conference on Correctional Health*. Boston, MA: University of Massachusetts; 2011.
24. U.S. Department of Justice. Bureau of Justice Statistics, criminal offenders statistics. Available at: http://www.ojp.usdoj.gov/bjs/crimoff.htm. Accessed on: August 15, 2007.
25. Sabol WJ, West HC, Cooper M. *Bureau of Justice Statistics Bulletin: Prisoners in 2008*. Washington, DC: US Department of Justice; 2009. NCJ 228417.
26. Perry SW. *American Indians and Crime: a BJS Statistical Profile, 1992–2002*. Washington, DC: U.S. Department of Justice; 2004.
27. Council of State Governments. *Trends Alert, Information for State Decision-Makers Corrections Health Care Costs*. Lexington: Council of State Governments; 2004.
28. Pew Charitable Trusts. *One in 100: Behind Bars in America 2008*. Washington, DC: The PEW Center on the States; 2008.
29. Marlow E, White MC, Chesla CA. Barriers and facilitators: parolees' perceptions of community health care. *J Correct Health Care*. 2010; 16(1): 17–26.
30. Pritchard C, Cox M, Dawson A. Suicide and 'violent' death in a six-year cohort of male probationers compared with pattern of mortality in the general population: evidence of accumulative socio-psychiatric vulnerability. *J R Soc Health*. 1997; 117(3): 180–185.

31. Binswanger IA, Stern MF, Deyo RA, et al. Release from prison—a high risk of death for former inmates. *N Engl J Med*. 2007; 356(2): 157–165.
32. Pew Charitable Trusts. *Prison Count 2010: State Population Declines for the First Time in 38 Years*. Washington, DC: Pew Charitable Trusts; 2010.
33. Baillargeon J, Giordano TP, Rich JD, et al. Accessing antiretroviral therapy following release from prison. *Jama*. 2009; 301(8): 848–857.
34. Freudenberg N. Jails, prisons, and the health of urban populations: a review of the impact of the correctional system on community health. *J Urban Health*. 2001; 78(2): 214–235.
35. Thomas JC, Levandowski BA, Isler MR, Torrone E, Wilson G. Incarceration and sexually transmitted infections: a neighborhood perspective. *Journal of Urban Health-Bulletin of the New York Academy of Medicine*. 2008; 85(1): 90–99.
36. Thomas JC, Torrone E. Incarceration as forced migration: effects on selected community health outcomes. *Am J Public Health*. 2006; 96(10): 1762–1765.
37. Iguchi MY, Bell J, Ramchand RN, Fain T. How criminal system racial disparities may translate into health disparities. *J Health Care Poor Underserved*. 2005; 16(4 Suppl B): 48–56.
38. Iguchi MY, London JA, Forge NG, Hickman L, Fain T, Riehman K. Elements of well-being affected by criminalizing the drug user. *Public Health Rep*. 2002; 117 (Suppl 1): S146–S150.
39. Glaze LE, Maruschak LM. *Bureau of Justice Statistics, Special Report: Parents in Prison and Their Minor Children*. Washington, DC: US Department of Justice, Bureau of Justice Statistics; 2008.
40. Travis J, Solomon AL, Waul M. *From Prison to Home: the Dimensions and Consequences of Prisoner Reentry*. Washington, DC: The Urban Institute; 2001.
41. Wang EA, Pletcher M, Lin F, et al. Incarceration, incident hypertension, and access to health care: findings from the coronary artery risk development in young adults (CARDIA) study. *Arch Intern Med*. 2009; 169(7): 687–693.
42. Wang E, Green J. Incarceration as a key variable in racial disparities of asthma prevalence. *BMC Public Health*. 2010; 10(1): 290.
43. Massoglia M. Incarceration as exposure: the prison, infectious disease, and other stress-related illnesses. *J Health Soc Behav*. 2008; 49(1): 56–71.
44. Massoglia M. Incarceration, health, and racial disparities in health. *Law & Society Review*. 2008; 42(2): 275–306.
45. Schnittker J, John A. Enduring stigma: the long-term effects of incarceration on health. *J Health Soc Behav*. 2007; 48(2): 115–130.
46. Rosen DL, Schoenbach VJ, Wohl DA, 12. All-cause and cause-specific mortality among men released from state prison, 1980–2005. *Am J Public Health*. 2008; 98 (12): 2278–2284.
47. Yates J. Racial incarceration disparity among States. *Social Sci Quarterly (University of Texas Press)*. 1997; 78(4): 1001–1010.
48. Schlesinger T. Racial and ethnic disparity in pretrial criminal processing. *Justice Quarterly*. 2005; 22(2): 170–192.
49. Blankenship KM, Smoyer AB, Bray SJ, Mattocks K. Black-white disparities in HIV/AIDS: the role of drug policy and the corrections system. *J Health Care Poor Underserved*. 2005; 16(4 Suppl B): 140–156.
50. Western B, 2. Mass imprisonment and economic inequality. *Soc Res*. 2007; 74: 509–532.
51. Sandefur RL. Access to civil justice and race, class, and gender inequality. *Annu Rev Sociol*. 2008; 34: 339–358.
52. Chandler RK, Fletcher BW, Volkow ND. Treating drug abuse and addiction in the criminal justice system: improving public health and safety. *JAMA*. 2009; 301(2): 183–190.
53. Greifinger RB. *Public Health Behind Bars: from Prisons to Communities*. New York: Springer; 2007.

54. Loeb SJ, Steffensmeier D, Lawrence F, 2. Comparing incarcerated and community-dwelling older men's health. *West J Nurs Res*. 2008; 30: 234–249. discussion 250–238.
55. Wendler D, Kington R, Madans J, et al. Are racial and ethnic minorities less willing to participate in health research? *PLoS Med*. 2005; 3(2): e19.
56. Noah BA. The participation of underrepresented minorities in clinical research. *Am J Law Med*. 2003; 29(2–3): 221–245.
57. Edlin BR, Carden MR, 5. Injection drug users: the overlooked core of the hepatitis C epidemic. *Clin Infect Dis*. 2006; 42: 673–676.
58. Anno BJ, 3. Prison health services: an overview. *Journal of Correctional Health Care*. 2004; 10: 287–301.
59. Anno BJ. *Correctional Health Care: Guidelines for the Management of an Adequate Delivery System*. Washington, DC: National Commission on Correctional Health Care and National Institute of Corrections; 2001.
60. Hartney C, Vuong L. *Created Equal: Racial and Ethnic Disparities in the US Criminal Justice System*. Oakland: National Council on Crime and Delinquency; 2009.
61. CDC, 6. Hepatitis B outbreak in a state correctional facility, 2000. *Jama*. 2001; 286: 665–667.
62. Polonsky S, Kerr S, Harris B, Gaiter J, Fichtner RR, Kennedy MG, 5. HIV prevention in prisons and jails: obstacles and opportunities. *Public Health Rep*. 1994; 109: 615–625.
63. Travis J. *But They All Come Back: Rethinking Prisoner Reentry*. Washington, DC: National Institute of Justice; 2000.
64. Varghese B, Peterman T. Cost-effectiveness of HIV counseling and testing in US prisons. *J Urban Health*. 2001; 78(2): 304–312.
65. Martin SS, O'Connell DJ, Inciardi JA, Surratt HL, Beard RA. HIV/AIDS among probationers: an assessment of risk and results from a brief intervention. *J Psychoactive Drugs*. 2003; 35(4): 435–443.