Traumatic Brain Injury in Prisons and Jails:

An Unrecognized Problem

Many people in prisons and jails are living with traumatic brain injury (TBI)-related problems that complicate their management and treatment while they are incarcerated. Because most prisoners will be released, these problems will also pose challenges when they return to the community. The Centers for Disease Control and Prevention (CDC) recognizes TBI in prisons and jails as an important public health problem.

What is known about TBI and related problems in prisons and jails?

General:

- More than two million people currently reside in U.S. prisons and jails.[1]
- According to jail and prison studies, 25-87% of inmates report having experienced a head injury or TBI [2-4] as compared to 8.5% in a general population reporting a history of TBI.[5]
- Prisoners who have had head injuries may also experience mental health problems such as severe depression and anxiety,[3] substance use disorders,[6-8] difficulty controlling anger,[6] or suicidal thoughts and/or attempts.[6,9]

Women:

- Although women are outnumbered by men in U.S. prisons and jails, their numbers more than doubled from 1990 to 2000.[1,10] As of June 2005, more than 200,000 women were incarcerated.[1] Women now represent 7% of the total U.S. prison population and 12% of the total U.S. jail population.[10]
- Women inmates who are convicted of a violent crime are more likely to have sustained a pre-crime TBI and/or some other form of physical abuse.[11]
- Women with substance use disorders have an increased risk for TBI compared with other women in the general U.S. population.[12]
- Preliminary results from one study suggest that TBI among women in prison is very common.[13]

Substance abuse, violence, and homelessness:

- Studies of prisoners' self-reported health indicate that those with one or more head injuries have significantly higher levels of alcohol and/or drug use during the year preceding their current incarceration.[6]
- The U.S. Department of Justice has reported that 52% of female offenders and 41% of male offenders are under the influence of drugs, alcohol, or both at the

time of their arrest,[14] and that 64% of male arrestees tested positive for at least one of five illicit drugs [cocaine, opioids, marijuana, methamphetamines, or PCP].[15]
- Among male prisoners, a history of TBI is strongly associated with perpetration of domestic and other kinds of violence.[16]
- Children and teenagers who have been convicted of a crime are more likely to have had a pre-crime TBI[17,18] and/or some other kind of physical abuse.[17,19,20]
- Homelessness has been found to be related to both head injury[21] and prior imprisonment.[22]

How do TBI-related problems affect prisoners with TBI and others during their incarceration?

A TBI may cause many different problems:

- Attention deficits may make it difficult for the prisoner with TBI to focus on a required task or respond to directions given by a correctional officer. Either situation may be misinterpreted, thus leading to an impression of deliberate defiance on the part of the prisoner.[2,23]
- Memory deficits can make it difficult to understand or remember rules or directions, which can lead to disciplinary actions by jail or prison staff.[24]
- Irritability or anger might be difficult to control and can lead to an incident with another prisoner or correctional officer and to further injury for the person and others.[23,25]
- Slowed verbal and physical responses may be interpreted by correctional officers as uncooperative behavior.[23]
- Uninhibited or impulsive behavior, including problems controlling anger[6] and unacceptable sexual behavior, may provoke other prisoners or result in disciplinary action by jail or prison staff.[23,26]

What is needed to address the problem of TBI in jails and prisons?

A recent report from the Commission on Safety and Abuse in America's Prisons recommends increased health screenings, evaluations, and treatment for inmates.[27]

In addition, TBI experts and some prison officials have suggested:

- Routine screening of jail and prison inmates to identify a history of TBI.[28,29]
- Screening inmates with TBI for possible alcohol and/or substance abuse and appropriate treatment for these co-occurring conditions.[15,30,31]
- Additional evaluations to identify specific TBI-related problems and determine how they should be managed.[28] Special attention should be given to impulsive behavior, including violence,[2,26] sexual behavior[23] and suicide risk if the inmate is depressed.[32]

What is needed to address TBI-related problems after release from jails and prisons?

Lack of treatment and rehabilitation for persons with mental health and substance abuse problems while incarcerated increases the probability that they will again abuse alcohol and/or drugs when released.[15,31] Persistent substance problems can lead to homelessness,[33] return to illegal drug activities,[34,35] re-arrest,[36] and increased risk of death[37] after release. As a result, criminal justice professionals and TBI experts have suggested the following:

- Community re-entry staff should be trained to identify a history of TBI and have access to appropriate consultation with other professionals with expertise in TBI.[17,29,30]
- Transition services for released persons returning to communities should accommodate the problems resulting from a TBI.[17,28,29]
- Released persons with mental health and/or substance abuse problems should receive case management services and assistance with placement into community treatment programs.[27,30,37]

CDC supports new research to develop better methods for identifying inmates with a history of TBI and related problems and for determining how many of them are living with such injury.

Further information is available from these websites:

Traumatic Brain Injury (TBI):
CDC, National Center for Injury Prevention and Control
www.cdc.gov/ncipc/tbi/TBI.htm

This site provides information for professionals and the general public regarding TBI. Topics include prevention, causes, outcomes, and research. Data reports regarding TBI in the United States and many free publications and fact sheets can be downloaded. Materials are available in English and Spanish.

Health Issues in Correctional Settings:
CDC, National Center for HIV, STD, and TB Prevention
www.cdc.gov/nchstp/od/cccwg/default.htm

This site provides information for public health and criminal justice professionals about health topics with an emphasis on infectious diseases in the correctional setting. It also has materials for the general public with links to related organizations.

Intimate Partner Violence (IPV):
CDC, National Center for Injury Prevention and Control
www.cdc.gov/ncipc/factsheets/ipvfacts.htm

The site provides information for professionals and the general public regarding IPV. The site contains an overview and fact sheet about IPV, prevention strategies, links to other IPV prevention organizations, and a list of current CDC publications.

Legal Issues of Persons with TBI within Correctional Settings:
National Disability Rights Network
www.ndrn.org/aboutus/consumer.htm

This site provides information about the laws protecting the civil and human rights of persons with disabilities, including TBI. Incarcerated persons with disabilities, or their families, can receive help from the Network regarding prisoners' legal rights, access to mental health services and/or medication, and restoration of benefits upon release.

Substance Abuse:
Substance Abuse & Mental Health Services Administration
www.samhsa.gov

This site provides information about treatment resources for persons with, or at risk for, mental and/or substance abuse problems. Also, the site provides information for professionals regarding alcohol and other drug-related disorders. The site has materials for specific populations and age groups and hotline numbers for support organizations.

References

1. Department of Justice (US), Office of Justice Programs, Bureau of Justice Statistics. Prison and jail inmates at midyear 2005 [online] 2006 [cited 2006 May 22]. Available from URL: www.ojp.usdoj.gov/bjs/pub/pdf/pjim05.pdf.

2. Schofield PW, Butler TG, Hollis SJ, Smith NE, Lee SJ, Kelso WM. Traumatic brain injury among Australian prisoners: rates, recurrence and sequelae. *Brain Injury* 2006;20(5):499-506.

3. Slaughter B, Fann JR, Ehde D. Traumatic brain injury in a county jail population: prevalence, neuropsychological functioning and psychiatric disorders. *Brain Injury* 2003;17(9):731-41.

4. Morrell RF, Merbitz CT, Jain S, Jain, S. Traumatic brain injury in prisoners. *Journal of Offender Rehabilitation* 1998;27(3-4):1-8.

5. Silver JM, Kramer R, Greenwald S, Weissman M. The association between head injuries and psychiatric disorders: findings from the New Haven NIMH Epidemiologic Catchment Area Study. *Brain Injury* 2001;15:935-45

6. Walker R, Hiller M, Staton M, Leukefeld CG. Head injury among drug abusers: an indicator of co-occurring problems. *Journal of Psychoactive Drugs* 2003;35(3):343-53.

7. Barnfield TV, Leathem JM. Neuropsychological outcomes of traumatic brain injury and substance abuse in a New Zealand prison population. *Brain Injury* 1998;12(11):951-62.

8. Barnfield TV, Leathem JM. Incidence and outcomes of traumatic brain injury and substance abuse in a New Zealand prison population. *Brain Injury* 1998;12(6):455-66.

9. Blaauw E, Arensman E, Kraaij V, Winkel FW, Bout R. Traumatic life events and suicide risk among jail inmates: the influence of types of events, time period and significant others. *Journal of Traumatic Stress* 2002;15(1):9-16.

10. Womens' Prisons Association. Hard hit: the growth in the imprisonment of women, 1977-2004. Greene J, Pranis K, editors; New York; Women's Prison Association, [online]. 2006 [cited 2006 Aug 3]. Available from URL: www.wpaonline.org/institute/hardhit/part1.htm#np.

11. Brewer Smyth K, Burgess AW, Shults J. Physical and sexual abuse, salivary cortical, and neurologic correlates of violent criminal behavior in female prison inmates. *Biological Psychiatry* 2004;55(1):21-31.

12. Felde AB, Westermeyer J, Thuras P. Co-morbid traumatic brain injury and substance use disorder: childhood predictors and adult correlates. *Brain Injury* 2006;20(1):41-9.

13. Diamond P, Magaletta P. TBI in the Federal prison: assessing history of traumatic brain injury in a prison population. A lecture given at the National Center for Injury Prevention and Control. Centers for Disease Control and Prevention; February 17, 2006; Atlanta, GA.

14. Department of Justice (US), Office of Justice Programs, Bureau of Justice Statistics. Substance abuse and treatment, state and federal prisoners, 1997 [online]. 2001 [cited 2006 Nov 8]. Available from URL: www.ojp.usdoj.gov/bjs/pub/pdf/satsfp97.pdf.

15. Department of Health and Human Services (US), Substance Abuse and Mental Health Services Administration. Put prevention into practice. Rockville (MD): Department of Health and Human Services; 1998. Treatment Improvement Protocol (TIP) Series 44, DHHS Publication No. (SMA) 98-3249. [cited 2006 Aug 3]. Available from URL: www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat5.chapter.80044.

16. Cohen RA, Rosenbaum A, Kane RL, Warnken WJ, Benjamin S. Neuropsychological correlates of domestic violence. *Violence and Victims* 1999;14(4):397-411.

17. Leon-Carrion J, Ramos FJ. Blows to the head during development can predispose to violent criminal behaviour: rehabilitation of consequences of head injury is a measure for crime prevention. *Brain Injury* 2003;17(3):207-16.

18. Timonen M, Miettunen J, Hakko H, Zitting H, Veijola J, von Wendt LRP. The association of preceding traumatic brain injury with mental disorders, alcoholism and criminality: the Northern Finland 1966 Birth Cohort Study. *Psychiatry Research* 2002;113(3):217-26.

19. Department of Justice (US), Office of Justice Programs, Bureau of Justice Statistics. Women offenders [online]. 2000 [cited 2006 May 15]. Available from URL: www.ojp.usdoj.gov/bjs/abstract/wo.htm.

20. Yeager CA, Lewis DO. Mental illness, neuropsychologic deficits, child abuse, and violence. *Child & Adolescent Psychiatric Clinics of North America* 2000;9(4):793-813.

21. Bremner AJ, Duke PJ, Nelson HE, Pantelis C, Barnes TR. Cognitive function and duration of rooflessness in entrants to a hostel for homeless men. *British Journal of Psychiatry* 1996;169(4):434-439.

22. Kushel MB, Hahn JA, Evans JL, Bangsberg DR, Moss AR. Revolving doors: imprisonment among the homeless and marginally housed population. *American Journal of Public Health* 2005;95(10):1747-52.

23. Kaufman CW. Handbook for correction officers and other institutional staff to identify and manage inmates with traumatic brain injuries [dissertation]. Miami (FL): Carlos Albizu University 2001. Available from: University Microfilms, Ann Arbor, MI. (UMI No. AAT3040762).

24. Merbitz C, Jain S, Good GL, Jain A. Reported head injury and disciplinary rule infractions in prison. *Journal of Offender Rehabilitation* 1995;22(3-4):11-19.

25. Department of Justice (US), Office of Justice Programs, Bureau of Justice Statistics. Medical problems of inmates, 1997 [online]. 2001 [cited 2006 May 15]. Available from URL: www.ojp.usdoj.gov/bjs/abstract/mpi97.htm.

26. Young MH, Justice JV, Erdberg P. Assault in prison and assault in prison psychiatric treatment. *Journal of Forensic Science* 2004;49(1):1-9.

27. Commission on Safety and Abuse in America's Prisons. Gibbons JJ , Katzenbach NB, co-chairs. Confronting confinement [online]. 2006 [cited 2006 Jun 8]. Available from URL: www.prisoncommission.org.

28. Sarapata M, Herrmann D, Johnson T, Aycock R. The role of head injury in cognitive functioning, emotional adjustment and criminal behaviour. *Brain Injury* 1998;12(10):821-42.

29. Fowles GP. Neuropsychologically impaired offenders: considerations for assessment and treatment. *Psychiatric Annals* 1988;18(12):692-7.

30. Department of Health and Human Services (US), National Institutes of Health, National Institute on Drug Abuse. Principles of drug abuse treatment for criminal justice populations. Rockville (MD): National Institutes of Health; 2006.

31. Department of Health and Human Services (US), Substance Abuse and Mental Health Services Administration. Substance use disorder treatment for people with physical and cognitive disabilities. Rockville (MD): Department of Health and Human Services; 1998. Treatment Improvement Protocol (TIP) Series 29, DHHS Publication No. (SMA) 98-3249. [cited 2006 August 3]. Available from URL: www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat5.chapter.52487.

32. Cauffman E. A statewide screening of mental health symptoms among juvenile offenders in detention. *Journal of the American Academy of Child & Adolescent Psychiatry* 2004;43(4):430-9.

33. Department of Justice (US), Office of Justice Programs, National Institute of Justice. When prisoners return to the community: political, economic, and social consequences. Petersilia J, editor. Washington (DC): Department of Justice; 2000. Sentencing & Corrections. No 9, NCIJ 180775 [online] [cited 2006 Aug 3]. Available from URL: www.ncjrs.gov/pdffiles1/nij/184253.pdf.

34. Burdon WM, Messina NP, Prendergast ML. The California treatment expansion initiative: aftercare participation, recidivism, and predictors of outcomes. *Prison Journal* 2004;84(1):61-80.

35. Prendergast ML, Campos M, Farabee D, Evans WK, Martinez J. Reducing substance abuse in prison: the California Department of Corrections. *Prison Journal* 2004;84(2):265-80.

36. Coid J. Correctional populations: criminal careers and recidivism. Oldham JM, Skodol AE, Bender DS, editors. Textbook of Personality Disorders. Washington (DC): American Psychiatric Publishing; 2005. p. 579-606.

37. Binswanger IA, Stern MF, Deyo RA, Heagerty PJ, Cheadle A, Elmore JG, et al. Release from prison—a high risk of death for former inmates. *New England Journal of Medicine* 2007;356(2):157-65.