be diminished by receipt of a negative HIV test, reports of high-risk sexual behavior must be addressed with appropriate prevention messages at the time of HIV pre- and post-test counseling. In addition, the results of this study support the integration of HIV-prevention activities into routine STD evaluation and care.

Because a substantial proportion of the college students either did not identify as gay or were not open about their sexual identity, prevention messages that focus on sexual risk reduction rather than gay identity should be developed for young black MSM. In addition, because nearly 20% of study participants also reported having recent female sex partners, HIV risk–reduction messages should be developed and communicated to young women as well. The information collected in the discussion groups with black college students highlights the value of soliciting community input before developing on- and off-campus HIV-prevention messages for this population.

Because study participants reported having recent sex contacts in multiple states, the frequency of high-risk behaviors in this population might not be limited to North Carolina. Further surveillance activities are needed to define the extent of high-risk behaviors among young black MSM in other geographic areas so appropriate on- and off-campus HIV-prevention activities can be designed.

The findings in this report are subject to at least four limitations. First, the sexual behaviors of enrolled participants might have been different from those persons not enrolled. Second, recall bias for high-risk behaviors might have occurred, especially for students with HIV diagnosed in 2001. Third, a selection bias might have been introduced because HIV-positive participants were identified through case reports, whereas HIV-negative participants were recruited primarily at nightclubs. Finally, the small sample size limits the ability to make certain inferences regarding differences in sexual behaviors.

This investigation demonstrates that expansion of multiple HIV-prevention activities for young black MSM is needed. Because this is the first investigation conducted in young black MSM outside of large urban settings, further studies should explore whether similar phenomena are occurring in other states, particularly in the southern United States. In response to these findings, CDC and NCDOH are collaborating to adapt a scientifically based preventive intervention for the black MSM population in North Carolina (*7*). In addition, CDC recently announced the availability of funding to implement rapid–HIV-testing demonstration projects in settings that include college campuses. State and local health departments as well as community-based organizations should consider engaging in similar HIV-prevention efforts and in the development of effective preventive interventions for young black MSM.

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Tuberculosis Transmission in Multiple Correctional Facilities — Kansas, 2002–2003

Tuberculosis (TB) is a substantial health concern in correctional facilities; inmates and employees are at high risk, and TB outbreaks can lead to transmission in surrounding communities (*1–3*). The Advisory Council for the Elimination of Tuberculosis (ACET) recommends that all correctional facilities have a written TB infection–control plan (TBICP) (*4*). In September 2002, after diagnosis of smear-positive pulmonary TB in a prison inmate, the Kansas TB Control Program, with assistance from CDC, initiated a 6-month contact investigation. This report summarizes the results of that investigation, which determined that, while symptomatic for TB, the inmate had resided in three different jails and a state prison, placing hundreds of employees and other inmates at risk for TB infection. The circumstances of this case underscore the need for effective TBICPs to be implemented by trained employees in jails and prisons and for establishment of mechanisms to facilitate information-sharing between correctional facilities and local and state health departments.

Case Report

In October 2001, a U.S.-born man aged 36 years who was living temporarily in a California homeless shelter had a productive cough with hemoptysis. In December 2001, a physician at the shelter examined the man, suspected TB or

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neoplasia, and recommended a chest radiograph; however, the man did not follow the recommendation.

In January 2002, the man returned to his residence in Kansas. Shortly after arrival, he turned himself in to police on an outstanding arrest warrant. He was held in jail A for 3 days before being transferred to jail B. While in jail B, he received a medical evaluation, and bronchial asthma was diagnosed. A tuberculin skin test (TST) was not administered, nor was a chest radiograph obtained. After 7 weeks in jail B, the man was released in March 2002.

In June 2002, the man was convicted of a crime and again placed in jail A for 3 days. He was then transferred to jail C, a large overflow facility, pending sentencing. During the 6 weeks the man was in jail C, 125 transferred inmates passed through the facility.

In August 2002, after being held for a total of 14 weeks in three jails, none of which had a TBICP or had provided TB screening for inmates or employees, the man was sentenced and transported to a Kansas state prison. During routine processing of entering inmates, he answered affirmatively to six of seven questions regarding TB symptoms. The state prison had a TBICP in place, and a medical evaluation was indicated on the basis of the man's answers; however, he was not referred for medical evaluation. Following the prison's TBICP procedure for entering prisoners who are to be serially TB screened, medical staff performed a two-step TST, which was read as 0 mm induration on both occasions. The new inmate was then placed among the general prison population.

Medical staff at the state prison did not see the inmate again until 4 weeks later, when he was scheduled to receive chronic care for asthma. At this medical examination, he received a chest radiograph that showed a cavitary lesion of the right lower lobe. Despite having TB symptoms, he was placed back with the general prison population and scheduled for a computerized tomography (CT) scan 2 weeks later to rule out neoplasia. After the CT scan indicated cavitary lesions consistent with TB, the man, now the TB index patient, was placed in airborne infection isolation (AII), and sputum samples were collected. The AII room was newly constructed and in working condition, according to maintenance and monitoring documentation. However, because the recommended N95 respirators (*5*) were not available, prison health staff used surgical masks when in the AII room with the index patient. The first laboratory result from the index patient of 4+ smear-positive *Mycobacterium tuberculosis* was reported in late September, 6 weeks after he had arrived at the prison facility.

Contact Investigation

A contact investigation conducted in Kansas and Missouri identified 318 of an estimated 800 possible contacts of the index patient during the infectious period, defined as the time from symptom onset to diagnosis, October 2001–September 2002. Of these contacts, two (0.6%) received a diagnosis of TB disease. These two patients had been cellmates of the index patient, one in jail A and the other in jail C. Tests of samples from these patients and the index patient determined they had *M. tuberculosis* isolates with a matching 10-band restriction fragment-length polymorphism pattern. The three isolates also had matching spacer oligonucleotide typing and mycobacterial interspersed repetitive unit patterns.

Of 318 contacts identified, 256 were tested, and 47 (19.1%) of those received diagnoses of latent TB infection (LTBI); 60 contacts could not be located or refused follow-up. Two (4.1%) had a previously documented positive TST. Sixty (23.4%) contacts had a previously documented negative TST, and six (10.0%) of these had a positive TST during investigation screening. Among 196 contacts with no previously documented TST, 41 (20.9%) had a positive TST during the investigation screening (Table). The majority of infections among jail and prison employees occurred in jail B (TST reaction rate: eight of 36 [22.2%]) and jail C (TST reaction rate: five of 32 [15.6%]), compared with jail A (TST reaction rate: one of 14 [7.1%]) and the state prison (TST reaction rate: one of 58 [1.7%]). All three jails had an open-cell design with multiple inmates per cell; the state prison had single-occupancy cells with solid walls and doors.

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TABLE. Tuberculin skin test (TST) reaction rate*, by contact group and TST history — Kansas, 2002–2003

Contact group	Total tested†	Contacts with positive TST	TST reaction rate (%)
Household			
Previously negative TST	1	1	100
No previous TST	5	3	60
Inmates			
Previously negative TST	21	3	14.3
No previous TST	81	25	30.9
Jail/Prison employees			
Previously negative TST	38	2	5.3
No previous TST	102	13	12.7
Other contacts			
Previously negative TST	0	0	0
No previous TST	8	0	0
Total contacts			
Previously negative TST	**60**	**6**	**10.0**
No previous TST	**196**	**41**	**20.9**

* TST reaction rate = contacts with positive TST/total contacts.
† N = 256.

Editorial Note: During 1992–2002, the TB rate in Kansas increased from 2.2 per 100,000 population to 3.3, the largest increase among all 50 states and the District of Columbia; in the majority of states, the TB rate declined (*6*). Although the contribution of correctional facilities to the TB burden in Kansas is unknown, a study in Tennessee reported that 43% of persons identified with TB in the city of Memphis had previous contact with a single urban jail and no other identified common exposure (*3*).

As a result of the investigation findings described in this report, the Kansas TB Control Program worked with prisons, jails, and local health departments to provide guidance for developing or improving TBICPs and providing TB education and baseline TSTs for all correctional employees. This guidance has improved communication among all agencies to coordinate the return to the community of inmates receiving TB medications.

Outbreak investigators were limited in their ability to determine the extent of TB transmission directly attributable to the index patient because of lack of previously documented TST results and the large number of contacts who could not be located or refused follow-up.

Compared with the general population, inmates have higher TB prevalence, associated with their higher prevalence of human immunodeficiency virus, increased illicit substance use, and lower socioeconomic status [SES]. The risk for TB is known to increase with lower SES, with crowded living conditions having the greatest impact (*7*). Overcrowding enhances the likelihood of infectious droplet nuclei transmission and has been correlated with TST conversion in the Maryland state correctional system (*8*). Cell design and overcrowding might have been factors in TB transmission in these three Kansas jails. However, the impact of overcrowding and ventilation could not be assessed directly in this investigation because facility surveys were not conducted.

Early identification and treatment of persons with TB disease remains the most effective means of preventing disease transmission. With the assistance of state and local health departments, correctional facilities should develop formal TBICPs (Box). Health departments should provide assistance to correctional facilities in developing TBICPs and conducting contact investigations, thereby controlling transmission within facilities and the surrounding communities. Employee education and continuous monitoring and evaluation of these policies should be part of every TBICP. In addition, correctional facilities should maintain a tracking system for inmate TB screening and treatment and establish a mechanism for sharing this information with local and state health departments and other correctional facilities (*4*).

BOX. Recommendations for a tuberculosis (TB) infection–control plan (TBICP) in a correctional facility

Goal of TBICP in correctional facilities
- Prevent disease transmission by enabling early identification and prompt initiation of treatment of TB disease.

Screen inmates
- Identify inmates with TB disease and latent TB infection (LTBI) promptly.
- Follow guidelines of the Advisory Council for the Elimination of Tuberculosis for screening based on correctional facility type.
- Report cases of suspected or confirmed TB disease to the health department.

Isolate persons with suspected or confirmed TB disease
- Use an airborne-infection isolation (AII) room within the facility or transfer the patient to a local hospital where an AII room is available.
- Instruct persons who enter the AII room to wear N95 respirators.
- Implement a thorough contact investigation promptly.

Treat persons with TB disease and LTBI
- Provide appropriate diagnostic, treatment, and laboratory services.
- Follow American Thoracic Society treatment guidelines.
- Perform directly observed therapy with all TB medications.
- Follow up with inmates released before completing treatment.

Assess TB prevention activities
- Monitor and evaluate screening and containment efforts.
- Collect and analyze data to monitor whether these activities are being implemented successfully.

Engineering controls
- Ensure that all engineering controls are properly installed and maintained.
- Consider supplementing ventilation systems in temporary holding and communal areas with high-efficiency particulate air filtration and ultraviolet germicidal irradiation.

Employee protection program
- Obtain medical history, provide physical examinations, and perform tuberculin skin testing for all new employees at the time of hiring.
- Implement a formal respiratory protection program, including employee education and fit testing for respirator use.

Sources: CDC. Prevention and control of tuberculosis in correctional facilities: recommendations of the Advisory Council for the Elimination of Tuberculosis. MMWR 1996;45(No. RR-8).

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Possible Dialysis-Related West Nile Virus Transmission — Georgia, 2003

In October 2003, the Georgia Division of Public Health (DPH) was notified of two patients from the same county with confirmed West Nile virus (WNV) disease who had received hemodialysis on the same day and on the same dialysis machine. The two dialysis patients (patients A and C) had the only confirmed cases of human WNV disease reported in their county in 2003. Review of the dialysis center's records indicated that another patient (patient B) had received dialysis on the same machine between these two patients on the same day. This report summarizes results of the epidemiologic investigation, which suggested that WNV might have been transmitted at the dialysis center. Hemodialysis centers should adhere strictly to established infection-control procedures to avoid WNV transmission through dialysis.

Patient A. The first patient, who received dialysis on the machine (machine A) in late August, was a man aged 77 years with a history of hypertension and end-stage renal disease (ESRD). Eight days after dialysis, patient A was hospitalized with a 48-hour history of fever, chills, confusion, and anorexia. Blood cultures were negative. Serologic testing of serum revealed IgM and IgG antibodies to WNV by enzyme-linked immunosorbent assay (ELISA) and a higher neutralizing antibody titer to WNV (1:1,280) than to St. Louis encephalitis virus (SLEV) (1:320). Patient A had not received a blood transfusion <30 days before symptom onset. After a 9-day hospitalization, he was afebrile at discharge.

Patient B. The second patient, who received dialysis on machine A between patients A and C, was a woman aged 71 years with a history of type 2 diabetes, ESRD, and hypertension. Dialysis center and hospital records and patient interview revealed no symptoms of illness during late August or early September, and patient B had not received a blood transfusion in July, August, or September. In addition, she had never received a flavivirus vaccination (which might elicit cross-reactive antibody to serologic tests for WNV) or traveled outside the United States. A serum sample obtained 42 days after dialysis was uninterpretable for IgM antibody to WNV (i.e., because of high background reactivity), negative for IgM to SLEV, and positive for IgG to both WNV and SLEV by ELISA; the neutralizing antibody titers were 1:160 to WNV and 1:10 to SLEV. A second specimen taken from this patient 84 days after dialysis was negative for IgM antibody to WNV and SLEV by ELISA, positive for IgG to both WNV and SLEV by ELISA, and had neutralizing antibody titers of 1:320 to WNV and 1:20 to SLEV.

Patient C. The third and last patient to receive dialysis on machine A on the same day in late August was a man aged 60 years with a history of type 2 diabetes, hypertension, alcoholism, recent onset of ESRD, and prostate cancer. Nineteen days after his dialysis procedure, patient C was admitted to a local hospital with fever, chills, altered mental status, and cachexia. After admission, he had seizures and was intubated and placed on a ventilator. Analysis of cerebrospinal fluid (CSF) indicated a mild pleocytosis (67 white blood cells [62% polynuclear cells, 38% mononuclear cells] and five red blood cells/mm^3) and an elevated protein level (122 mg/dL). Computerized tomography scans of the patient's brain on the second and tenth days of hospitalization revealed bilateral lacunar infarcts, white matter changes, and cortical and subcortical atrophy. Serologic tests of serum were positive for IgM and IgG antibodies to WNV by ELISA. The neutralizing antibody titer was higher to WNV (1:1,280) than to SLEV (1:20). Patient C had not received a blood transfusion <30 days before symptom onset. Twenty days after admission, he had a high fever and respiratory failure and died.

DPH and the local health department investigated practices and procedures at the dialysis center. No breakdowns in disinfection procedures for the dialysis machine or dialyzers

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HIV Transmission Among Black College Student and Non-Student Men Who Have Sex With Men — North Carolina, 2003

In the United States, young black men who have sex with men (MSM) and reside in urban settings have high rates of infection with human immunodeficiency virus (HIV), with incidence and prevalence as high as 14% and 32%, respectively (*1–4*). Few epidemiologic and behavioral studies have been conducted in this population, and even fewer data are available for black MSM from non-urban areas of the southern United States. In November 2002, the North Carolina Department of Health (NCDOH) identified two cases of acute HIV infection among non-Hispanic black male college students. A retrospective review of all men aged 18–30 years with HIV diagnosed during January 2000–May 2003 indicated an increase in HIV case reports in male college students, from two cases in 2000 to 56 during January 2001–May 2003 (*5*). Of these 56, a total of 49 (88%) were black, and nearly all were MSM, including some men who had sex with both men and women. In August 2003, NCDOH invited CDC to assist with an epidemiologic investigation of young HIV-positive black MSM in North Carolina. This report summarizes the results of that investigation, which indicated that black MSM college students and non-students in North Carolina had high rates of HIV risk behaviors, underscoring the need for enhanced HIV-prevention programs in these populations.

NCDOH surveillance data from 1998–2002 for newly reported HIV infections and North Carolina census data were reviewed (*6*); age- and race-specific HIV rates were calculated. A case-control study was conducted to identify behavioral risk factors for HIV infection in young black MSM. Cases were defined as those occurring in HIV-positive college students who had HIV diagnosed during 2001–2003, were black MSM aged 18–30 years, and were North Carolina residents. Two groups of HIV-negative controls were enrolled in the study (i.e., college students and non-students), all of whom also were black MSM aged 18–30 years who lived in North Carolina. Face-to-face interviews were conducted to obtain epidemiologic and behavioral information. Sexual behaviors were reported for the 12-month period preceding either the date of diagnosis for HIV-positive college students or the date of interview for HIV-negative college students and non-students.

To complement quantitative information collected by questionnaire, all participants were asked to share insights about why high-risk sexual behavior was occurring among young black MSM. In addition, three discussion groups were convened with approximately 60 black male and female students from 11 colleges in North Carolina to discern perceived barriers to sexual risk reduction and to elicit suggestions for prevention programs targeting college students.

During 1998–2002, rates of newly reported HIV infection in North Carolina were higher in black men in all age groups compared with white men overall (Figure). Among black men aged 18–24 years, a statistically significant increase was observed during this period, from 65 per 100,000 population in 1998 to 92 in 2002 ($p<0.01$).

Of the 49 HIV-positive black male college students who had been identified previously by the NCDOH HIV surveillance system, 17 (35%) were recruited for the study; 24 could

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