3-2002

HEPP News, Vol. 5 No. 3

HIV & Hepatitis Education Prison Project

HEPP NEWS
HIV & HEPATITIS EDUCATION PRISON PROJECT
March 2002 Vol. 5, Issue 3
SPONSORED BY THE BROWN MEDICAL SCHOOL OFFICE OF CONTINUING MEDICAL EDUCATION.

ABOUT HEPP

HEPP News, a forum for correctional problem solving, targets correctional administrators and HIV/AIDS and hepatitis care providers including physicians, nurses, outreach workers, and case managers. Continuing Medical Education credits are provided by the Brown University Office of Continuing Medical Education to physicians who accurately respond to the questions on the last page of the newsletter.

FACULTY DISCLOSURE

In accordance with the Accreditation Council for Continuing Medical Education Standards for Commercial Support, the faculty for this activity have been asked to complete Conflict of Interest Disclosure forms. Disclosures are listed at the end of articles. All of the individual medications discussed in this newsletter are approved for treatment of HIV and hepatitis unless otherwise indicated. For the treatment of HIV and hepatitis infection, many physicians opt to use combination antiretroviral therapy which is not addressed by the FDA.

HEPP News is grateful for the support of the following companies through unrestricted educational grants:
Major Support: Agouron Pharmaceuticals, Abbott Laboratories, and Roche Pharmaceuticals
Sustaining: Boehringer-Ingelheim Laboratories, Schering-Plough, Virologic and GlaxoSmithKline

TUBERCULOSIS IN CORRECTIONS: 2002 UPDATE

Joseph Bick, M.D.*, *Editor, HEPP News*

TABLE 1: Percentage of TB Cases, by State[5]

Area	Total Number of TB cases in 2000	% of Population Incarcerated^	% of TB cases in Inmates
United States	16,377	0.49	3.6
Oklahoma	154	0.67	10.4
South Carolina	286	0.55	9.1
Arizona	261	0.51	8.0
Texas	1,506	0.78	6.3
Florida	1,171	0.44	5.8
Georgia	703	0.53	5.3
New York State	412	0.37	4.9
Ohio	340	0.41	4.4
Louisiana	331	0.78	4.3
Missouri	211	0.49	3.8
California	3,297	0.48	3.5

^Calculated by dividing the number of prisoners under the jurisdiction of State or Federal authorities, midyear 2000[18], by the state population, July 1, 2000.[19]

In the United States, the number of cases of TB disease has been falling since the beginning of the century. The availability of highly effective treatment accelerated this decline, and by 1970 the Advisory Council for the Elimination of Tuberculosis (ACET) committed to the goal of eliminating TB in the United States by the year 2010. Elimination was defined as less than one case per one million persons per year.

After decades of success, the nation became complacent and lackadaisical about TB. Monies that had been targeted toward TB prevention and control were diverted to other programs, and the country witnessed a resurgence of TB. Between 1985 and 1992, the number of TB cases reported increased over 20%. Fueled by both the deterioration of the public health system and the HIV epidemic, TB cases and drug resistance grew at a worrisome pace throughout the latter part of the eighties and early nineties.

It has been estimated that it takes 100- 200 individuals living together in close contact to support the ongoing transmission of tuberculosis (TB). Therefore, it should not have been surprising that when prisoners with high rates of LTBI and HIV infection were clustered in overcrowded, poorly ventilated congregate living environments, that the situation was perfect for cultivating TB. The first documentation of transmission of multidrug-resistant TB (MDR-TB) in a correctional system occurred in 1991, when 8 cases of MDR-TB developed in a correctional facility in New York. Those with active disease included seven prisoners, all HIV-infected with CD4 counts <60, and one employee who had undergone radiation treatment for a malignancy and had a CD4 count of 110. All eight individuals died.[1]

Contemporaneously, an inmate in California with MDR-TB had multiple lapses in unsupervised therapy during which he was not housed in negative pressure respiratory isolation. A contact investigation revealed skin test conversions among staff.[2]

Subsequently during 1995-1996, staff from the California Department of Corrections and health services and local health departments investigated two outbreaks of drug-susceptible TB. The

Continued on page 2

WHAT'S INSIDE

HEPPigram ..... pg 6
HIV 101 ..... pg 7
Self-Assessment Test ..... pg 9

TB in Corrections...
(continued from page 1)

outbreaks occurred in two state correctional institutions with dedicated HIV housing units. In each outbreak, all cases were linked by IS6110-based DNA fingerprinting of MTB isolates. In all, 30 cases of TB were diagnosed, including one case in a visitor. The findings indicated that MTB can spread rapidly among HIV-infected inmates and be transmitted to their visitors and prison employees, with secondary spread to the community.[3]

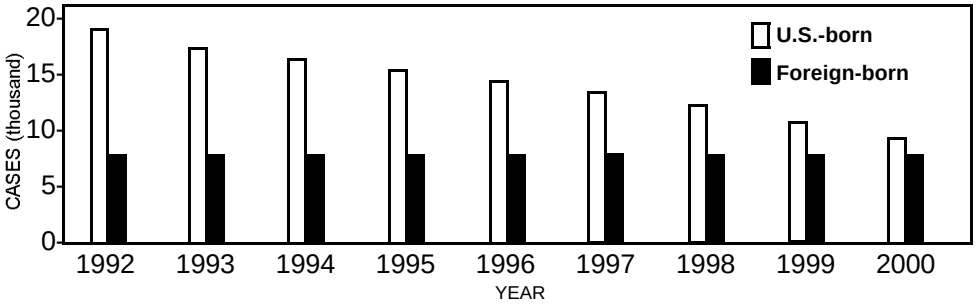
And finally, demonstrating that those who do not learn from the past are condemned to repeat it, South Carolina experienced an outbreak in 1999-2000 in a unit housing HIV infected prisoners. In all, TB disease developed in 31 prisoners and one medical student.[4]

Nationwide, the rate of active TB cases in the incarcerated is 10-20 times greater than that in the general U.S. population. Data from 2000 reveals an inordinate number of TB cases in residents of correctional facilities as compared to the nation as a whole (Table 1, p. 1).

In 2000, the Institute of Medicine (IOM) released a report entitled *Ending Neglect: The Elimination of Tuberculosis in the United States.* This report stated "… without question the major reason for the resurgence of tuberculosis was the deterioration of the public health infrastructure essential for the control of tuberculosis." The report went on to say, "The question now confronting the United States is whether another cycle of neglect will be allowed to begin or whether, instead, decisive action will be taken to eliminate the disease." Additionally, "at the current rate of decline, … it will take more than 70 years to reach the target for elimination of tuberculosis of 1 case … per million population." One recommendation of the IOM was to increase targeted skin testing and treatment of LTBI programs for high-risk groups such as inmates of correctional facilities.[6]

Another area of concern is the increasing proportion of TB cases in this country that develop among the foreign born. During 2000, a total of 16,377 U.S. cases of TB were reported, representing a 39% decrease from 1992 (26,673 cases). However, the case rate among foreign-born persons remains at least seven times higher than among U.S.-born persons. Of the 26,673 cases in 1992, 7,270 (34.2 per 100,000 population) cases were reported among foreign-born persons, representing 27% of all cases. Of the 16,377 cases in 2000, 7,554 (25.8 per 100,000 population) were among foreign-born persons, representing 46% of all cases (Figure 1).[7]

Figure 1: Number of cases of TB in U.S.-born and foreign-born persons - United States, 1992-2000



The number of states with >50% of their annual total of reported TB cases among foreign-born persons increased from four in 1992 to 21 in 2000. Of these 21 states, California, Hawaii, Massachusetts, Minnesota, and New Hampshire had >70% of their annual total of cases among foreign-born persons.[7]

The proportion of patients with MDR-TB decreased from 486 (3%) of 17,684 in 1993 to 141 (1%) of 12,056 in 2000. However, of the total number of reported MDR-TB cases, the proportion occurring in foreign-born persons increased from 31% in 1993 to 72% in 2000.[7]

Clearly, TB will not be brought under control in this country without a greater emphasis being placed upon the diagnosis and treatment of LTBI among the incarcerated. In the nation's largest correctional systems (California, Texas, Florida, New York) foreign-born prisoners make up a significant number of the total detainees. Studies have demonstrated the prevalence of LTBI among prisoners to be from 14% to 25%. Other studies have shown that the longer prisoners are incarcerated, the more likely they are to have a positive tuberculin skin-test result. This data supports the probability that transmission of TB is occurring within correctional facilities. Once again, as with HIV, hepatitis, mental illness, STDs, and innumerable other public health issues it becomes clear that as goes the health of the incarcerated, so goes the health of the nation.

What then, is the role of this nation's correctional health care providers when it comes to TB? Much of the information that follows is based upon the guidelines for the Prevention and Control of Tuberculosis in Correctional Facilities: Recommendations of the Advisory Council for the Elimination of Tuberculosis, MMWR 1996 45 (RR-8).[8]

As with any other medical effort in the correctional setting, success of a TB infection control program depends upon the active cooperation of custody. The first step therefore is to involve each facility's sheriff or warden in the implementation of a TB control plan. All medical and custodial staff must be trained about their role in this plan.

All correctional facilities, even those in which few TB cases are expected to occur, should designate a person or group of persons who will be responsible for the facility's TB infection-control program. These persons should have the authority to develop, implement, enforce, and evaluate TB infection-control policies. If supervisory responsibility is assigned to a committee, one person should be designated as the contact person to whom questions and problems can be addressed. In systems with more than one facility, one person should be designated to oversee TB infection-control activities throughout the system.

TB infection-control officials and all clinicians who treat inmates or employees of correctional facilities should be familiar with current guidelines concerning TB from the Centers for Disease Control and Prevention, the American Thoracic Society/ CDC,[9] and the National Commission on Correctional Health Care (NCCHC).[10, 11]

Medical facilities located within correctional facilities should conduct a thorough risk assessment and follow the recommendations in the CDC Guidelines for Preventing the Transmission of *Mycobacterium tuberculosis* in Health-Care Facilities.[12] Last month HEPP News editors participated in the drafting of a revision to this document, attempting to ensure that the unique challenges of correctional TB control will be addressed.

Correctional facility officials should form close working relationships with their state and local health departments, which can assist correctional facilities in formulating, implementing, and evaluating TB control activities. Correctional staff should ensure that they have access to same day chest radiographs, induced sputum collection, 24-hour turn around time for AFB sputum smears, and a sufficient number of negative pressure respiratory isolation rooms. In addition, laboratories processing AFB specimens must utilize rapid culture tech-

Continued on page 4

Letter from the Editor

Dear Colleagues,

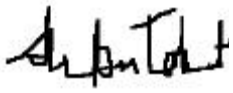
My University of Washington colleagues and I recently returned from Peru where we regularly meet with our fellow Peruvian HIV Prevention Trial Unit (HPTU) and HIV Vaccine Trials Unit (HVTU) collaborators. Like most Latin American countries, Peru is a largely impoverished nation. In contrast to most African countries, however, the prevalence of HIV in the general population in Peru is still relatively low. HIV incidence in certain high-risk groups such as gay and bisexual men is very high providing opportunities for assessing and implementing HIV prevention strategies.

Dr. De Groot described how patients in Mali suffer and die from OIs commonly treated in developed nations due to lack of access to treatment in the developing world (HEPP, January 2002); the same is often true in Peru. Access to antiretroviral medications is also limited in Peru. Unlike many African countries, though, the Peruvian government makes PCP and TB prophylaxis universally available to patients in the publicly-financed health care programs.

What stands out most in my mind is the Peruvian National Tuberculosis (TB) Control Program implemented in 1990 - a model system more successfully implemented than those in most developed countries. Peru is one of the seven countries meeting the WHO target goals for tuberculosis and has adopted "universal" Directly Observed Therapy (DOT). Peru's program has resulted in a national rate of decline of >5.9% per year from 1991-2000, indicating that 70% (91,000) of possible TB-related deaths were averted.

In contrast to the largely successful Peruvian TB Control, the U.S. system has largely been a failure, especially in controlling and treating TB among inmates and foreign born persons. Because of these problems, we dedicate this month's issue to TB in corrections. Dr. Bick outlines the TB problem and summarizes the inordinate rates of TB among inmates and foreign born persons, providing a rational and practical approach to and summary of CDC guidelines for control of TB in correctional institutions. We can only hope that correctional health care providers will some day be given sufficient support to implement adequate TB control programs in our nation's correctional institutions.

After reading this issue, health care providers should be familiar with many aspects of TB care, including the CDC guidelines for managing tuberculosis in the correctional setting; how to manage a positive PPD skin test; and understand the complications involved in treating a patient who is both HIV-and TB-positive.



Dr. Stephen Tabet, MD, MPH

Subscribe to HEPP News

Fax to **617.770.3339** for any of the following: *(please print clearly or type)*

____ Yes, I would like to add/update/correct (circle one) my contact information for my complimentary subscription of HEPP News fax/email newsletter.

____ Yes, I would like to sign up the following colleague to receive a complimentary subscription of HEPP News fax/email newsletter.

____ Yes, I would like my HEPP News to be delivered in the future as an attached PDF file in an email (rather than have a fax).

NAME: _____ FACILITY: _____

CHECK ONE:

○ Physician ○ Physician Assistant ○ Nurse/Nurse Practitioner ○ Nurse Administrator
○ Pharmacist ○ Medical Director/Administrator ○ HIV Case Worker/Counselor ○ Other

ADDRESS: _____ CITY: _____ STATE: ___ ZIP: _____

FAX: _____ PHONE: _____

EMAIL: _____

Published monthly and distributed by fax, HEPP News provides up-to-the-moment information on HIV and hepatitis treatment, efficient approaches to administering treatment in the correctional environment, national and international news related to HIV and hepatitis in prisons and jails, and changes in correctional care that impact HIV and hepatitis treatment.

TB in Corrections...

(continued from page 2)

niques (i.e. bactec systems) and perform gene probe assays on positive cultures to ensure prompt species identification. Access to DNA fingerprinting of positive cultures is an important tool in the event of an outbreak situation.

The TB infection control program should be responsible for the following three essential TB control activities:
I. Screening: identifying persons who are infected with *M. tuberculosis* or who have active TB disease (see HEPPigram, p. 6);
II. Containment: preventing transmission of *M. tuberculosis* and adequately treating persons who have latent TB infection or active TB disease; and
III. Assessment: monitoring and evaluating the screening and containment activities.

The remainder of this article will focus on screening for and treatment of active TB and LTBI.

I. Screening

Screening for active TB and LTBI should take place a) at the time of intake, b) at least annually thereafter, and c) whenever signs or symptoms develop that might be due to TB disease.

a. At intake

During medical evaluation at intake ("bus screening"), inmates should be asked if they have had active TB disease or if they have been treated for latent TB infection or active TB disease. This information should be recorded in each inmate's medical record. Any inmate who has a history of inadequate treatment for TB disease should undergo a thorough medical evaluation followed by prompt re-initiation of therapy.

All new arrivals should be evaluated for signs or symptoms consistent with active TB. Those with symptoms of TB (e.g., a productive, prolonged cough {a cough lasting for greater than or equal to 3 weeks}; hemoptysis {coughing up blood} fever, chills, night sweats, easy fatigue, loss of appetite, or weight loss) should be masked and then placed in respiratory isolation until active TB can be ruled out. (See HEPPigram, p. 6)

All HIV-infected persons, regardless of whether they are symptomatic or have a positive skin test, should be screened with a chest radiograph. TB can be difficult to diagnose in HIV-infected persons or other severely immunosuppressed persons.[13] The chest radiographs of severely immunosuppressed persons who have pulmonary TB might not have a classical appearance; for example, infiltrates without cavities in any lung zone or mediastinal or hilar lymphadenopathy might be present. In rare situations, the chest radiograph of a severely immunosuppressed person who has pulmonary TB disease may appear normal.[13]

Table 2: Directly Observed Therapy (DOT)[15]

	Daily	DOT 2x/week	DOT 3x/week
INH	5 mg/kg (300 mg)*	15 mg/kg (900 mg)*	15 mg/kg(900 mg)*
RIF**	10 mg/kg(600 mg)*	10 mg/kg(600 mg)*	10 mg/kg(600 mg)*
PZA	15-30 mg/kg(2 g)*	50-70 mg/kg(4 g)*	50-70 mg/kg(3 g)*
EMB	15-25 mg/kg(2 g)*	50 mg/kg(4 g)*	25-30 mg/kg(2.5 g)*
SM	15 mg/kg(1 g)*	25-30 mg/kg(1 g)*	25-30 mg/kg(1 g)*

** Maximum dose*
*** RIF may be used with EFV, RTV, or RTV + SQV when there are no other PIs or NNRTIs. When EFV is given with RIF, increase EFV dose to 800 mg/day. For other PI and NNRTI regimens, use RFB with dose Adjustments in Table 3.*

Table 3: PI/NNRTI + RFB Dose Adjustments[15]

PI or NNRTI	RFB (Rifabutin)
IDV, 1000 mg q8h	150 mg/day or 300 mg 2x/wk
NFV, 1000 mg tid or 1500 bid	150 mg/day or 300 mg 2x/wk
APV, 1200 mg bid	150 mg/day or 300 mg 2x/wk
EFV, 800 mg qd	450 mg/day or 600 mg 2x/wk
NVP, 200 mg bid	300 mg/day
RTV, standard	150 mg 2-3x/wk
RTV/SQV, 400/400 mg bid	150 mg 2-3x/wk
LPV/RTV, 400/100 mg bid	150 mg qod

APV = amprenavir, DLV = delavirdine, EFV = efavirenz, EMB = ethambutol, IDV = indinavir, INH = isonazide, LPV = lopinavir, NVP = nevirapine, NFV = nelfinavir, PZA = pyrazinamide, RFB = rifabutin, RIF = rifampin, RTV = ritonavir, SM = streptomycin, SQV = saquinavir

Skin testing

All new arrivals should undergo screening for TB infection with the Mantoux tuberculin skin test using 0.1 ml of 5 tuberculin units (TU) of PPD. Those who have a documented history of a positive skin-test result, a documented history of TB disease, or a reported history of a severe necrotic reaction to tuberculin should be exempt from routine tuberculin skin-test screening. Neither pregnancy, lactation, nor previous vaccination with Bacillus of Calmette and Guerin (BCG) vaccine is a contraindication for tuberculin skin testing.

The reaction to the Mantoux skin test should be interpreted by an experienced worker 48-72 hours after the injection by measuring the area of induration (i.e., the palpable swelling) at the injection site. The diameter of the indurated area should be measured across the width of the forearm. Erythema (i.e., the redness of the skin) should not be measured. All reactions, even those classified as negative, should be recorded in millimeters of induration.

Generally, a tuberculin skin-test reaction of greater than or equal to 10 mm induration is considered a positive result in inmates and correctional-facility employees. However, an induration of greater than or equal to 5 mm is considered a positive result in persons in the following groups:
1. close contacts of a person who has infectious TB
2. persons whose chest radiographs are suggestive of previous TB disease;
3. persons known to have HIV infection; and
4. persons who are at risk for HIV infection, including injecting-drug users whose HIV status is unknown.

Vaccination with BCG, a TB vaccine used in many countries, can cause a reaction to the tuberculin skin test. No reliable method can distinguish tuberculin reactions caused by BCG from those caused by infection with *M. tuberculosis*. A diagnosis of LTBI and the use of preventive therapy should be considered for any BCG-vaccinated prisoner who has a tuberculin skin-test reaction of greater than or equal to 10 mm of induration.

Persons who have a positive skin-test result and no symptoms suggestive of TB should be screened with a posterior-anterior chest radiograph. If an inmate has a positive skin-test result and a diagnosis of active TB disease has been excluded, the inmate should be considered for preventive therapy (see Section IIb on page 5).

Sputum-smear and culture examinations should be conducted for inmates whose chest radiographs are suggestive of active TB disease, regardless of their skin-test results. In some large jails, TB control officials should consider using on-site chest radiography to screen all inmates for TB dis-

Continued on page 5

TB in Corrections...
(continued from page 4)

ease. Such screening is particularly important for jails in which a) the prevalence of TB disease is high, b) the inmate population changes rapidly, and c) the prevalence of HIV infection and illicit-drug injection is high. Jail officials should consult the local TB control officer for assistance in assessing the need for, and cost-effectiveness of, such screening.

b. Annual follow-up screening

Inmates who had a negative skin-test result at intake should have an annual PPD skin test. Those who have a history of a positive skin-test result and who have not completed a course of preventive therapy should be screened for symptoms of TB disease. Annual chest radiographs are unnecessary for the follow-up evaluation of infected persons.

c. At any time when symptoms are detected

Inmates who at any time have symptoms suggestive of TB disease should immediately receive a thorough medical evaluation, including a tuberculin skin test, a chest radiograph, and, if indicated, sputum examinations. While under investigation, suspect cases should be housed in a negative pressure respiratory isolation room.

IIa. Containment: treatment of active disease

For most inmate-patients, the preferred initial treatment regimen includes four drugs: isoniazid, rifampin, pyrazinamide, and either ethambutol or streptomycin (for dosing see Table 2; for recommended regimens, see HIV101). Because pyrazinamide and streptomycin should not be used to treat pregnant women, pregnancy must be excluded in women of child-bearing ages before treatment for TB disease is initiated. Furthermore, TB infected patients who are also HIV- positive AND are on a HAART regimen containing a PI or NNRTI should receive rifabutin (RFB) instead of rifampin (RIF) and may also require dose adjustments in their HIV medications (Table 3).

Patients with sputum smear positive TB should remain in negative pressure respiratory isolation until they have satisfied all of the following conditions:

1) they have received 7-10 days of directly observed therapy (DOT)
2) three separate consecutive sputum specimens are smear negative for AFB
3) the patient's symptoms have improved

Failure to respond to treatment usually is caused by patient non-adherence to therapy, but can also be caused by a drug-resistant strain of MTB. Drug-susceptibility testing should be performed on all initial MTB isolates, regardless of sputum-smear results. If an inmate is to be released or transferred out of the facility before completing therapy, the public health department or receiving correctional facility should be notified as far in advance as possible and should be provided with appropriate medical records to ensure continued adherence to and timely completion of therapy.

All inmates being treated for active TB disease should be on DOT to ensure adherence to therapy. Inadequate or interrupted treatment for TB can result in relapse, continued transmission, and the development of drug-resistant disease. Therefore, after effective therapy has begun, continued treatment without interruption is critical until patients complete an entire course of therapy.

IIb. Containment: preventive therapy for LTBI

The recommended regimen for preventive therapy in inmates, because they are at high risk for TB, regardless of HIV status is a single daily dose of 300 mg of isoniazid for 9 months given by DOT. For those who are known to be HIV sero-negative, a six month course of therapy may be acceptable. If daily-supervised therapy is not feasible, twice-weekly supervised therapy with isoniazid (15 mg/kg of isoniazid per dose, with a maximum dose of 900 mg) is a suitable alternative (see HIV101). Before release or transfer of an inmate, provisions should be made for the public health department or receiving facility to oversee completion of an appropriate course of preventive therapy.

During the entire treatment period, persons receiving preventive therapy should be monitored monthly by medical personnel for signs and symptoms of adverse reactions. Because of the high rate of underlying liver disease in inmates, baseline transaminase measurements should be obtained at the initiation of preventive therapy. Those who are found to have abnormal baseline transaminases and those who have other factors associated with an increased risk for hepatitis (chronic liver disease, daily use of alcohol, injecting- drug use, or current use of another medication that might cause interactions) should have transaminases measured monthly during the course of treatment.

An alternative short course treatment regimen for LTBI utilizing 2 months of rifampin and PZA was found to be safe and highly effective in HIV-infected individuals with LTBI. Subsequently, however, fatal and severe liver injuries have been associated with the use of this regimen in HIV sero-negative individuals.[16, 17] It is not clear why those who are HIV sero-negative would be more likely to develop side effects from this regimen than those who are HIV sero-positive. However, it seems prudent to advise that the 2-month RIF-PZA treatment regimen for LTBI should be used with caution, especially in patients concurrently taking other medications associated with liver injury, and those with alcoholism, even if alcohol use is discontinued during treatment. RIF-PZA is not recommended for persons with underlying liver disease or for those who have had INH-associated liver injury. For persons not infected with HIV, 9 months of daily INH remains the preferred treatment for LTBI; 4 months of daily RIF is an acceptable alternative.

Persons for whom TB preventive therapy is recommended but who refuse or are unable to complete a recommended course of therapy should be counseled to seek prompt medical attention if they develop signs or symptoms suggestive of TB. Routine, periodic chest radiographs of persons who have a documented history of a positive skin-test result usually are not useful for detecting disease in the absence of symptoms.

Conclusion

After decades of decline in this country, TB cases rose during the latter part of the eighties. This resurgence was fueled by both the HIV epidemic and the deterioration of the public health infrastructure. With renewed attention and increased resources, TB cases are again beginning to decline. An increasingly disproportionate number of new cases are diagnosed among those who are foreign born and among the incarcerated. MDR-TB cases are also more common in these two populations. Elimination of TB in this country will require intensified screening, treatment, and containment efforts among prisoners and the foreign born. Those of us working in correctional health are on the front line of this effort to rid our nation of TB. Success will require education of all correctional employees and close cooperation with custody staff as well as state and local health departments.

**Nothing to disclose*

REFERENCES:

1. MMWR 41(28); 507-509. http://www.cdc.gov/mmwr/preview/mmwrhtml/00017241.htm

2. MMWR 42(03); 48-51. http://www.cdc.gov/mmwr/PDF/wk/mm4203.pdf

3. MMWR 48(04); 79-82. http://www.cdc.gov/mmwr/PDF/wk/mm4804.pdf

4. MMWR 49(46) ;1041-1044. http://www.cdc.gov/mmwr/PDF/wk/mm4946.pdf

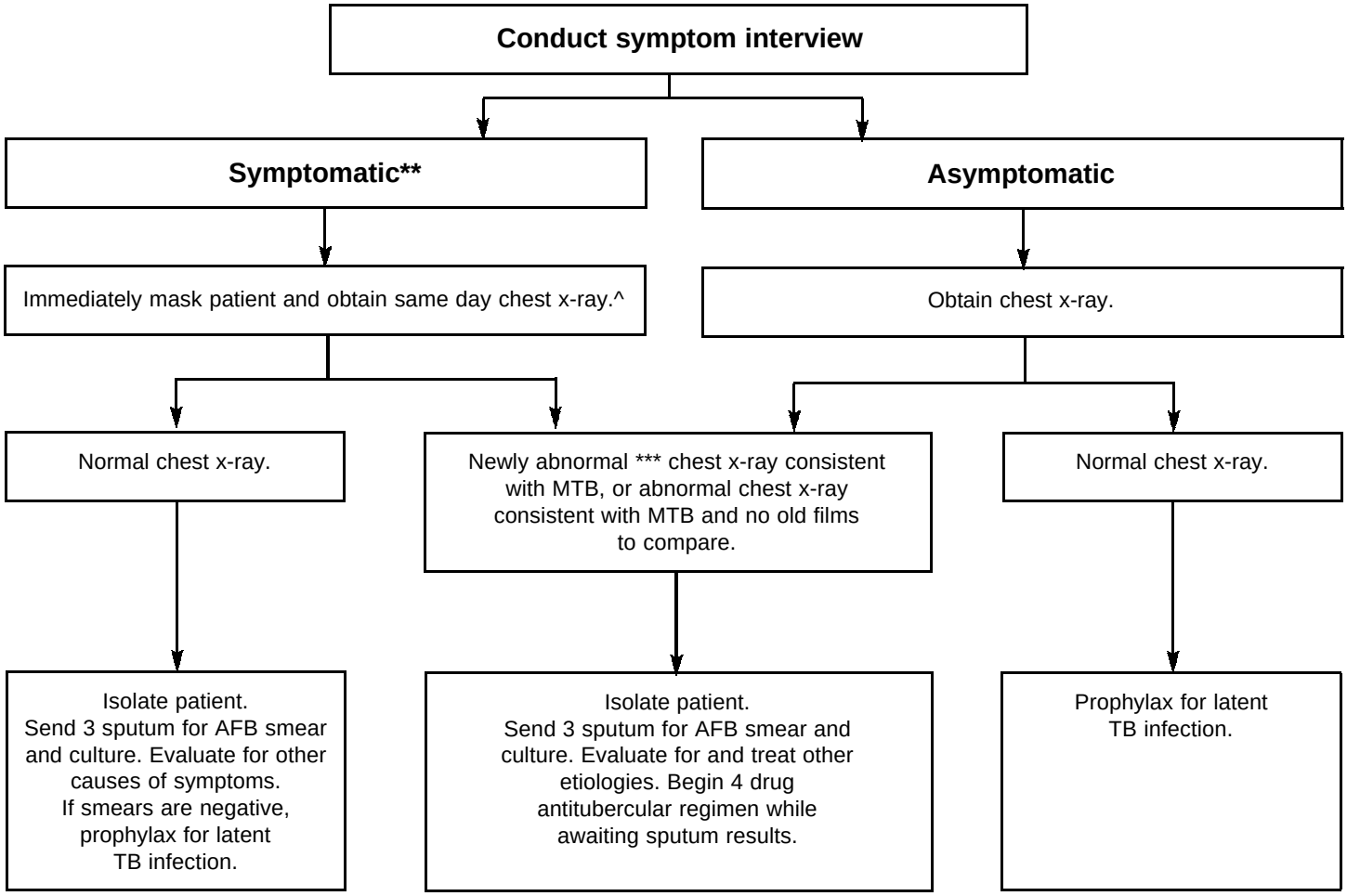
5. http://www.cdc.gov/nchstp/tb/surv/surv2000/pdfs/t23.pdf

6. Ending Neglect: The Elimination of Tuberculosis in the United States. Institute of Medicine, 2000. http://www.iom.edu/iom/iomhome.nsf/WFiles/TB8pagerfinal/$file/TB8pagerfinal.PDF

Continued on page 6

HEPPIGRAM: Management of a Positive PPD Skin Test

The following is one approach to the incarcerated patient with a newly positive PPD skin test* on routine screening, regardless of HIV status. This algorithm represents an aggressive approach, appropriate for the correctional setting because of:
1) congregate living environments, which facilitate the rapid spread of MTB;
2) the high prevalence of HIV, much of which is undiagnosed.



*Positive PPD Skin Test is:
- ≥5mm for HIV + patient.
- ≥10mm for HIV- patient.
- an increase of ≥5mm from a prior PPD skin test.
- ≥5mm if patient has a history of TB contact.

**Symptoms include hemoptysis, cough, fever, weight loss, and night sweats.
***Classically, MTB presents with apical infiltrates. In those with HIV infection, the chest x-ray may be normal, or reveal mediastinal adenopathy, or middle/lower lobe infiltrates.
^If same day chest x-ray is not available, immediately isolate patient in negative pressure setting, use masking when out of negative pressure room. Obtain chest x-ray as soon as possible.

TB IN CORRECTIONS... ***(continued from page 5)***

7. MMWR 51(05); 101-104. http://www.cdc.gov/mmwr/PDF/wk/mm5105.pdf
8. MMWR 45(RR-8). http://www.cdc.gov/mmwr/PDF/RR/RR4508.pdf
9. Am J Respir Crit Care Med 1994; 149: 1359-74.
10. Standards for health services in jails. Chicago: National Commission on Correctional Health Care, 1992.
11. Standards for health services in prisons. Chicago: National Commission on Correctional Health Care, 1992.
12. MMWR 43(RR-13). http://www.cdc.gov/mmwr/PDF/RR/RR4313.pdf
13. Am Rev Respir Dis 1990; 142: 725-35.
14. Mohle-Boetani J., Bick J. et al. CID 2002; 34: 668-76.
15. Bartlett JG, Gallant JE. Medical Management of HIV Infection 2001-2002 Edition. Johns Hopkins University, Baltimore MD 2001
16. MMWR 50(15). http://www.cdc.gov/mmwr/PDF/wk/mm5015.pdf
17. MMWR 50(34). http://www.cdc.gov/mmwr/PDF/wk/mm5034.pdf
18. Prison and Jail Inmates at Midyear 2000. Bureau of Justice Statistics Report, p.3. http://www.ojp.usdoj.gov/bjs/pub/pdf/pjim00.pdf
19. U.S. Census Bureau Figures, http://eire.census.gov/popest/data/states/populartables/table01.php

Tuberculosis Treatment and Prophylaxis Recommendations

TABLE A: TREATMENT of ACTIVE TB*

Induction	Maintenance	Comment
Rifampin (RIF)-based therapy (no concurrent use of PIs or NNRTIs)		
1. INH/RIF/PZA/EMB (or SM) daily x 2 months	INH/RIF daily or 2-3x/week x 18 weeks	RIF-containing regimens preclude concurrent PIs or NNRTIs except with EFV, RTV, and RTV + SQV. Assess HIV at 3 month intervals to determine needs for ART. A 2-week wash-out period is required between the last RIF dose and initiation of PI or NNRTIs.
2. INH/RIF/PZA/EMB (or SM) daily x 2 weeks, then 2-3x/week x 6 weeks	INH/RIF or 2-3x/week x 18 weeks	
3. INH/RIF/PZA/EMB (or SM) 3x/week x 8 weeks	INH/RIF/PZA/EMB (or SM) 3x/week x 4 months	
Rifabutin (RFB)-based therapy (concurrent PI or NNRTI)		
1. INH/RFB/PZA/EMB daily x 8 weeks	INH/RFB daily or 2x/week x 18 weeks	Monitor for RFB toxicity-arthralgias, uveitis, leukopenia. Dose modifications of RFB and PIs/NNRTI when given concurrently (see Table 3, p. 4). RFB should not be given with SQV or DLV.
2. INH/RFB/PZA/EMB daily x 2 weeks, then 2x/week x 6 weeks	INH/RFB daily or 2-3x/week x 18 weeks	
Streptomycin (SM)-based therapy (concurrent PI or NNRTI)		
1. INH/SM/PZA/EMB daily x 8 weeks	INH/SM/PZA 2-3x/week x 30 weeks	SM is contraindicated in pregnant women as is PZA. If SM cannot be continued for 9 months add EMB and treatment should be extended to 12 months.
2. INH/SM/PZA/EMB daily x 2 weeks, then 2-3x/week x 6 weeks	INH/SM/PZA 2-3x/week x 30 weeks	

For dosing, see Table 2 in the main article.
** Treatment of bone or CNS disease should be at least 1 year.*

TABLE B: PROPHYLAXIS of LATENT TB INFECTION

Risk: PPD+ (≥5 mm induration) without prior prophylaxis or treatment (AI), recent TB contact (AII), or history of inadequately treated TB that healed (AII) (MMWR 2000; 49: [RR-6] and MMWR 1998; 47 [RR-20]).

Preferred	Alternatives*	Special Cases
– INH 300 mg/day + pyridoxine 50 mg/day, x 9 mo or up to 12 mo w/ interruptions (AII) – INH 900 mg + pyridoxine 100 mg 2x/wk DOT, x 9 mo or up to 12 mo w/ interruptions (BII) patient not receiving PI or NNRTI: – **RIF 600 mg/day + PZA 20 mg/kg/day, x 2 mo or up to 3 mo w/ interruptions (AI) **(**see NOTE below)**	– RIF 600 mg/day x 4 mo (BII) * patients receiving PI or NNRTI need RFB 15-30 mg/kg/day in place of (RIF)/PZA and antiretroviral dose adjustment if receiving PI or NNRTI (BIII) (see dose adjustments in Table 3 in the main article) x 2 mo	**INH-resistant strain:** RIF 600 mg/day + PZA 20 mg/kg/day x 2 mo (AI); alternative: RIF 300 mg/day PO x 4 mo (CIII) **INH- and RIF- resistant strain:** use 2 agents with anticipated activity- EMB/PZA or levofloxacin/PZA **Pregnancy:** INH regimens **Monitoring:** baseline LFTs (bilirubin, AST & ALT), and CBC if treated w/ RIF or RFB- CBC. Repeat tests if baseline tests are abnormal or if there are symptoms of hepatitis. Recipients of INH or RIF alone: clinical review monthly; RIF or RFB + PZA: review at 2,4, and 8 wks

**** NOTE:** The 2-month RIF/PZA treatment for latent tuberculosis infection (LTBI) has been shown to cause liver injury in HIV-negative patients. Therefore, in most cases, the 9-month INH regimen is preferred for treatment of LTBI. The RIF/PZA regimen should be used with caution especially in those patients concurrently taking other medications associated with liver injury, and those with alcoholism, even when alcohol use is discontinued during treatment. Full information on recommendations concerning RIF/PZA are available in the MMWR 50 (34): 733-735 or at http://www.cdc.gov/mmwr/PDF/wk/mm5034.pdf

WARNING: Six (6) months of TB treatment may not be sufficient for HIV-positive patients (see Inside News, p. 8).

EMB = ethambutol, INH = isoniazid, PZA = pyrazinamide, RFB = rifabutin, RIF = rifampin, SM= streptomycin

Adapted from: Bartlett JG, Gallant JE. Medical Management of HIV Infection 2001-2002 Edition. Johns Hopkins University, Baltimore MD 2001 (112-113).

Save the Dates

International Conference on Emerging Infectious Diseases
March 24-27, 2002
Atlanta, Georgia
Fee: $350
Visit: http://www.cdc.gov/iceid/
Call: C. Schable, 404.639.4581
Email: cas1@cdc.gov

HIV Pathogenesis, Antiretrovirals, and Other Selected Issues in HIV Disease Management
March 25, 2002
New York, NY
Sponsored by the International AIDS Society-USA
Fee: $55
Visit: http://www.iausa.org
Call: 415.561.6725
Email: cme@iausa.org

Clinical Updates in Correctional Health Care
April 13-16, 2002
Fort Lauderdale, Florida
Fee: $225 Academy members, $300 non-Academy members
Visit: www.ncchc.org
Fax: 773.880.2424

Twelfth Annual Clinical Care Options for HIV Symposium
April 25-28, 2002
Miami, Florida
Sponsored by the Northwestern University School of Medicine
Register by March 25, 2002
Visit: http://imedoptions.com
Call: 888.391.3996

Sixth Annual HIV Update: Contemporary Issues in Management
June 6-8, 2002
Boston, Massachusetts
Fee: Before April 26: $550, $350 Residents and Fellows; after April 26: $595, $375 Residents and Fellows
Call: 617.384.8600
Fax: 617.284.8686
Email: hms-cme@hms.harvard.edu

XIV International AIDS Conference
July 7-12, 2002
Barcelona, Spain
Fee: before May 1 2002: $950; after May 1 2002: $1050 (special rates and scholarships available)
Visit: www.aids2002.com
Email: aids2002.registration@congrex.se

Inside News

TB

Tuberculosis: the Situation in the United States, 2000
MMWR 2/8/02 51(5):101-04; http://www.cdc.gov/mmwr/PDF/wk/mm5105.pdf
As reported in the MMWR, the CDC announced a 7% drop in the number of TB cases in the United States from 1999-2000 (June 2001). The data indicate a drop in TB cases among US-born populations combined with a rise in the number of cases among foreign-born US populations (see Main Article).

Six-Month TB Treatment May Not Be Effective for HIV-Positive Patients
Clin Infect Dis 2001;33:1762-1769
A retrospective study of patients infected with drug susceptible tuberculosis (TB) has found that the 6-month TB treatment usually given in the United States may not provide protection against TB recurrence or relapse for HIV-positive patients. HIV-positive patients were more likely to have a recurrence of TB than were HIV-negative patients (2.4% v. 0.6%); the same was true for the risk of TB relapse (3% v.0.8%). Clinicians should be aware that there is a possibility of TB recurrence or relapse 6 to 9 months after a patient begins treatment, and that this risk is far greater for HIV-positive patients. It is recommended that the sputum of HIV-positive patients be checked 3 months after the short course (6 month) TB treatment for assessment.

California Settles Lawsuit Involving Prison Health Care
Reuters, 1/30/02
A class-action lawsuit brought against the California Department of Corrections (Calif. DOC) cited "cruel and unusual punishment," alleging that the Calif. DOC did not provide adequate healthcare to its 160,000 inmates.The suit alleged that the Calif. DOC was "lax" in assessing the medical needs of its inmates in part because it did not hire enough medical personnel, did not have adequate screening procedures for incoming inmates, delayed testing and treatment, and was unable to deal with chronic illnesses, including HIV and diabetes. The Calif. DOC has settled this lawsuit, agreeing to improve health care over the next several years and allowing an independent firm audit and monitor the state's progress.

HIV

Simplified Efavirenz Regimen Approved
FDA Release, 2/4/02
The FDA has approved a once-daily, single pill formulation of the NNRTI efavirenz (brand name Sustiva). The new once-daily pill is a 600 mg tablet that can be taken in place of the three 200 mg capsules currently available. The new dosage should be available by the end of February; the old formulation of 200 mg capsules will continue to be available as well. Decreased pill burdens may increase patient adherence.

FDA Approves Combining Amprenavir + Ritonavir
FDA Release, 2/5/02
The FDA has approved new dosing for the concomitant use of Amprenavir (brand name Agenerase) and Ritonavir (brand name Norvir). The new package insert of amprenavir now includes the following dosing options when used in conjunction with ritonavir: 1200 mg amprenavir plus 200 mg ritonavir once daily or 600 mg amprenavir plus 100 mg ritonavir twice daily. The new information on these medications used concomitantly is available from the FDA at http://www.fda.gov/cder/foi/label/2002/21007s010lbl.pdf.

Florida: HAART No Longer Available Upon Discharge
South Florida Sun-Sentinel, 2/13/02
HIV-positive jail inmates in Broward County, Florida, will no longer receive a temporary (30-day) supply of antiretroviral medications upon release. The supply was meant as a "stop-gap" to give HIV-positive inmates time access medication once they left the jail. However, the new medical services at the jail realized that the jail did not have the proper licensure to distribute drugs outside of the jail. Experts are concerned that this will negatively impact the health of county inmates released to the community. Editor's note: The Fla. DOC is still continuing its program of a 30-day supply of HAART medications in combination with its "Coordination to Care." The change in Broward County will not affect Fla. DOC inmates.

Job Opening
The Washington State Dept. of Corrections is looking for a new Medical Director. For more information, visit http://www.wa.gov/doc/Content/docjobs.htm, or call 360.753.1573.

Resources & Websites

WHO Global Tuberculosis Program
www.fda.gov/cder/foi/label/2002/21007s010lbl.pdf

CDC Core Curriculum on TB
www.cdc.gov/nchstp/tb/pubs/corecurr/default.htm
Order free paper copy at https://www2.cdc.gov/nchstp_od/PIWeb/TBorderform.asp

CDC Division of Tuberculosis Elimination
www.cdc.gov/nchstp/tb/

OSHA Tuberculosis Site
www.osha-slc.gov/SLTC/tuberculosis/

Report from the 39th Annual IDSA: Tuberculosis Update
www.hopkins-tb.org/events/idsa39.shtml

NEW Adult and Adolescent HIV Treatment guidelines
www.hivatis.org/guidelines/adult/Feb04_02/AdultGdl.pdf

NEW HHS Guidelines for the use of Antiretrovirals in Pregnant Women
www.hivatis.org/guidelines/perinatal/Feb4_02/Perin.pdf

Self-Assessment Test for Continuing Medical Education Credit

Brown Medical School designates this educational activity for 1 hour in category 1 credit toward the AMA Physician's Recognition Award. To be eligible for CME credit, answer the questions below by circling the letter next to the correct answer to each of the questions. A minimum of 70% of the questions must be answered correctly. This activity is eligible for CME credit through October 30, 2002. The estimated time for completion of this activity is one hour and there is no fee for participation.

1. What is considered to be a positive PPD skin test for an HIV-negative incarcerated patient?
   a) ≥5 mm
   b) ≥5 mm if the patient has a history of TB contact
   c) ≥5 mm increase from a prior PPD skin test
   d) ≥10 mm
   e) b, c, or d

2. It is recommended that screening for TB in correctional facilities occurs:
   a) At intake, and prior to release
   b) At intake, annually thereafter, and when signs/symptoms develop that may be due to TB disease
   c) At intake, annually thereafter, and prior to release
   d) At intake and annually thereafter, only for patients who have sentences of more than 12 months
   e) On an annual basis and prior to release

3. Patients with sputum smear positive TB should remain in negative pressure respiratory isolation until they satisfied which of the following conditions?
   a) Two consecutive sputum smears are negative for AFB
   b) The patient's symptoms have improved
   c) Three consecutive sputum smears are negative for AFB
   d) The patient has received 7-10 days of directly observed therapy (DOT)
   e) a, b, and d
   f) b, c, and d

4. Which of the following statement(s) is (are) TRUE?
   a) There have been multiple documented transmissions of multi-drug resistant TB (MDR-TB) in correctional settings.
   b) There has been a steady decline in the tuberculosis case rate in the United States since the 1980's
   c) The IOM report cited that the deterioration of public health infrastructure was to blame for the resurgence of tuberculosis
   d) The rate of active TB cases nationwide is 10-20 times higher in the incarcerated than the general US population
   e) a, b, and c
   f) a, c, and d

5. When a patient is on nelfinavir (NFV, Viracept) as part of a HAART regimen, what is the proper dose of rifabutin (RFB) to use concurrently for treating TB?
   a) 150 mg/ day
   b) 300 mg/ day
   c) 450 mg/day
   d) 600 mg/day
   e) 300 mg/wk

6. Neither pregnancy, lactation, nor previous vaccination with BCG are contraindications for tuberculin skin testing.
   a) True
   b) False

HEPP News Evaluation

5 Excellent 4 Very Good 3 Fair 2 Poor 1 Very Poor

1. Please evaluate the following sections with respect to:

	educational value	clarity
Main Article	5 4 3 2 1	5 4 3 2 1
HEPPigram	5 4 3 2 1	5 4 3 2 1
HIV 101	5 4 3 2 1	5 4 3 2 1
Save the Dates	5 4 3 2 1	5 4 3 2 1

2. Do you feel that HEPP News helps you in your work? Why or why not?

3. What future topics should HEPP News address?

4. How can HEPP News be made more useful to you?

5. Do you have specific comments on this issue?

Brown Medical School • Office of Continuing Medical Education • Box G-A2 • Providence, RI 02912

The Brown Medical School is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education activities for physicians.

For Continuing Medical Education credit please complete the following and mail or fax to 401.863.2660 or register online at www.hivcorrections.org. Be sure to print clearly so that we have the correct information for you.

Name _____ Degree _____

Address _____

_____

City _____ State _____ Zip _____

Telephone _____ Fax _____