



## **TB No Longer a Problem?**

**October 2010**

Please pass this information on to your colleagues interested in eliminating TB and remember to put [jseggerson@tbcoalition.com](mailto:jseggerson@tbcoalition.com) in your e-mail address book to make sure you continue to receive these e-mails.

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**Do you know of colleagues, policy makers, friends in the press, or other acquaintances who believe the disease is no longer a problem? Share the following reports with them. Most of these TB-related reports (below) from many different U.S. states, the District of Columbia, Guam, and Canada were taken from the Centers for Disease Control's TB-Related News and Journal Items Weekly Update and they all occurred in just the past 3 months (July – September, 2010). These are not all the TB reports and articles - just those that were identified. Many of these reports describe problems that present significant challenges for health departments.**

**NEW JERSEY: "Foot Soldiers in the Day-to-Day Battle Against Tuberculosis";** Star-Ledger, Newark; 09.26.10; Seth.Augenstein.

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The Global TB Institute at the University of Medicine and Dentistry of New Jersey is helping patients to recover, and to stay healthy, by ensuring that those with TB are not leaving their medications unfinished. Patients who feel better sometimes decide to stop taking their medication before they are cured, said Lee Reichman, executive director of the institute. "If you have hypertension and you don't take your medicine, it's your tragedy," Reichman said. "If you have TB and you don't take your medicine, it's everyone's tragedy." TB has declined in Newark since 1998, when the city had more than 83 cases. Last year, the city reported 27 cases, according to the state Department of Health and Senior Services. "We'll sit down and talk like normal people," Marvalin Reid said of her interactions with Gloria Leifer, an outreach worker for the TB Institute. Leifer visits every afternoon as part of the directly observed therapy program. Reid has drug-resistant TB but now is on a new regimen, and a part of Leifer's job is to make sure she sticks with it. Being easygoing, patient, and peaceful helps, said Leifer, who relates with patients on each trip. "To do this job, you have to have a certain personality," she said. "You've got to be smiling - you can't bring your problems to this job. You have to be a real human being." The institute has nine people who go out into the field to help treat more than 100 TB patients in Essex and Union counties. It also has a team of investigators who track the contacts of infectious patients to help curb transmission. "I wish I could just go to work and get my life back to where I started," said Reid. "I take my pills every day. ... Hopefully this [regimen] works. I've got my fingers crossed."

**MARYLAND: Computer Model Shows US Vulnerable to MDR-TB Epidemic;** Genetic Engineering Biotechnology News, September 27, 2010, by Tim Parsons.

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A study by researchers at Johns Hopkins University showed that the United States has made much progress in preventing and treating TB, but is more susceptible to potential epidemics of multidrug-resistant TB (MDR TB). Computer simulation results showed that as TB prevalence falls, the risk for more extensive MDR TB increases. Also, higher detection of TB cases, without proper treatment of the patients, increases risk. The researchers developed a computer model to simulate the potential for MDR TB epidemics. They used 81 scenarios over 500 years with different levels of treatment quality, diagnosis accuracy, microbial fitness, and degree of immunogenicity to drug-susceptible TB. David Bishai, senior author of the study and associate professor at Johns Hopkins Bloomberg School of Public Health, noted that the ability of MDR TB to spread depended on the prevalence of drug-susceptible TB. Reduction of the risk of MDR TB epidemics in the United States depends on ensuring that populations around the world combine high rates of case findings with high adherence to DOT. The computer simulation used by the researchers is available at <http://mdr.tbtools.org>. The study was published in the journal PLoS ONE 5(9): e12843. doi:10.1371.

**VIRGINIA: Piedmont Virginia Community College Student has TB;** The Daily Progress Charlottesville; By Brian McNeill; October 07, 2010

A Piedmont Virginia Community College student has tested positive for tuberculosis, potentially exposing 230 fellow students and six faculty members to the disease. The student's identity and condition are being withheld because of confidentiality rules, college and health department officials said. Tuberculosis is a disease that typically affects the lungs, though it can also affect the brain, kidneys or spine. Its symptoms can include weakness, weight loss, fever, night sweats, heavy coughing, chest pain and the coughing up of blood. The disease can be fatal if left untreated, according to the Centers for Disease Control and Prevention. TB is caused by germs that spread from person to person through the air when someone with the disease of the lungs or throat coughs, sneezes, speaks or sings. The germs can stay in the air for several hours. The disease cannot be spread through casual contact. "People think, if they've been exposed or if they're infected, that it can then spread to others," said Dr. Lilian Peake, executive director of the Thomas Jefferson Health District. "That's not the case." TB is a fairly rare disease, with the local health district seeing just four cases or so each year. The CDC reports there were just 12,904 cases of TB in the United States in 2008, a rate of 4.2 cases per 100,000 people. Many people with TB never exhibit symptoms, as they have a latent version of the disease in which the immune system fights off the bacteria. People with latent TB cannot spread the disease to others. Someone with an active case of TB, however, shows symptoms and may spread the disease to other people. Latent TB cases can be treated by taking a preventative drug over the course of nine months. Active cases require the patient to take four drugs for two months, then two drugs for an additional four months. "It's a serious disease, but it is very treatable," Peake said. In the case of the PVCC student, college officials were first notified that there had been an exposure to someone with active TB on Sept. 13. College officials investigated and identified the 230 students and six faculty members who fit the risk criterion of extended and repeated contact with the infected student. PVCC notified the six faculty members between Sept. 27 and Oct. 4. On Monday, the college and the Thomas Jefferson Health District sent a letter to the possibly exposed students to inform them about the situation and let them know that a special clinic has been established to provide free testing. Piedmont's dean of students notified the rest of the college's students, faculty and staff about the outbreak on Wednesday. The health district, Peake said, has notified others outside the PVCC community who might have come in contact with the infected student. PVCC spokeswoman Anita Showers said the message has gotten out and the college is optimistic that the risk has been minimized. Showers praised the response from the Thomas Jefferson Health District in helping the college take the necessary measures following the outbreak. "We're just happy with the cooperation with the Thomas Jefferson Health District," she said. "Their staff are experts in these matters and we're really pleased with the level of collaboration going on."

**MARYLAND: New TB Vaccine Enters Clinical Testing - Modernized BCG Vaccine Designed to Attack TB at Multiple Stages; 9.23.2010; Rockville, MD, USA and Tallinn, Estonia.**

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At an international gathering of TB vaccine researchers in Tallinn today, the Aeras Global TB Vaccine Foundation announced it will initiate a clinical trial of an investigational live recombinant tuberculosis vaccine to be led by researchers at Saint Louis University in St. Louis, Missouri, USA. The announcement was made at the Second Global Forum on TB Vaccine Development. Building on more than a decade of global scientific research, Aeras scientists have engineered a new investigational vaccine, called AERAS-422, which will undergo clinical trials to evaluate its properties for interrupting TB at all stages of infection, including initial infection, latency and reactivation. "Moving our lead in-house vaccine from the laboratory into clinical testing is an important milestone for Aeras and its partners. Finding a potential replacement for the currently available TB vaccine, which was invented almost 90 years ago, is a primary goal in our mission," said Thomas G. Evans, MD, Aeras' Chief Scientific Officer. "Based on data from pre-clinical studies, we are cautiously optimistic about the potential of this vaccine candidate to be safer and more immunogenic than the currently available vaccine." The new vaccine, called AERAS-422, is a modernized version of the currently used TB vaccine – Bacille Calmette Guérin (BCG). BCG is widely viewed as insufficient in preventing pulmonary TB, and this trial is part of a wider global effort to develop safer and more immunogenic TB vaccines that would be effective against all forms of TB. "The TB epidemic continues to become more complex and difficult to control, especially in South Africa where resistance to available TB treatments is on the rise," said Bernard Fourie, PhD, Chief Scientific Officer of Medicine in Need and Managing Director of Mend South Africa. "The scientific

community has made developing a safer and more effective TB vaccine a priority and we are pleased that there is progress in the field."

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**HAWAII: "CDC Awards TB Testing Contract"; Associated Press; 09.29.10.**

Diagnostic Laboratory Services Inc. of Hawaii said Tuesday it has been awarded a five-year contract from CDC to continue clinical lab testing for TB in the Pacific region. The work covers American Samoa, the Northern Mariana Islands, the Marshall Islands, Palau, and Micronesia. The company's Dr. Matthew Bankowski said quick diagnosis is especially important for patients with drug-resistant TB, and a new type of molecular testing will be used to reduce detection time from weeks to hours.

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**ARKANSAS: Sanatorium's History Treating Tuberculosis Recalled in 100th Year; Arkansas Democrat-Gazette-Little Rock; 09.12.10; Dave Hughes.**

On Saturday, about 600 people are expected to mark the 100th anniversary of the Arkansas Tuberculosis Sanatorium in Booneville. ATS saw 70,000 patients at its 900-acre complex between 1910 to 1973. The commemoration will include a dedication of the ATS museum, remarks by local and state dignitaries, screening of a documentary about the facility, lunch and a walking tour of the complex. When ATS first opened, 100 people were dying of TB in Little Rock each year. ATS soon housed about 650 patients. With the help of a \$1.2 million state appropriation, ATS expanded in 1940, and by 1957, it had 540 salaried and 60 part-time employees and 1,200-1,500 patients a year. In the late 1920s, a separate sanatorium for black patients opened in Alexandria. The emphasis on isolating TB patients from the general population carried over to the facility itself, which had its own water supply and sewage treatment facilities. ATS produced its own vegetables, fruit, pork, beef and dairy products. Guinea pigs were raised for TB treatment research. ATS even had its own school, fire station, ice house, theater, morgue, newspaper and post office, said Jim Biggs, president of Booneville Historic Preservation Society. ATS was located in the hills, catching the summer breeze but not winter fog or damp. The pine forest scent also was thought beneficial, and many patients slept on screened verandas from spring to late autumn.

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**UNITED STATES: "Epidemiology of Tuberculosis Among US- and Foreign-Born Children and Adolescents in the United States, 1994-2007"; American Journal of Public Health Vol. 100; No. 9; Heather J. Menzies, et al.**

Researchers with CDC's Division of Tuberculosis Elimination examined TB cases and case rates among US- and foreign-born children and adolescents (C&A). They also analyzed the potential effect of changes to overseas TB screening for immigration applicants. Based on case data from the National Tuberculosis Surveillance System from 1994 to 2007, the study found foreign-born C&A accounted for 31 percent of the 18,659 reported TB diagnoses in persons younger than 18. During the study period, TB rates declined 44 percent among foreign-born C&A (20.3 per 100,000 to 11.4 per 100,000) and 48 percent among US-born C&A (2.1 per 100,000 to 1.1 per 100,000). TB rates were nearly 20 times higher among foreign-born than US-born C&A. Of foreign-born patients with known month of US entry (88 percent), more than 20 percent were diagnosed with TB within three months of entry. "Marked disparities in TB morbidity persist between foreign- and US-born children and adolescents," the study authors concluded. "These disparities and the high proportion of TB cases diagnosed shortly after US entry suggest a need for enhanced pre-and post-immigration screening."

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**TEXAS: San Augustine Superintendent Eases Fears of Tuberculosis at School; KTRE TV; Morgan Thomas; Updated: Sep 21, 2010.**

SAN AUGUSTINE, TX (KTRE) - Concern that tuberculosis was being exposed to San Augustine Elementary students is nothing to worry about, according to the school district's superintendent. Walter Key said two students had a relative who was diagnosed with tuberculosis, but both students were tested by the hospital and returned to school Monday with a clean bill of health. Key said students are being sent home with a pamphlet on tuberculosis today.

**GUAM: NEWS UPDATE: Active tuberculosis case at Maria Ulloa Elementary School;** Pacifac Daily News: September 21, 2010.

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A Maria Ulloa Elementary School employee was released from the Dededo school following a diagnosis of active tuberculosis, according to a Department of Public Health and Social Services press release. Public Health and Department of Education are working together to identify students, staff and faculty who were in close contact with the employee. A TB screening will be held at the school 8:30-11:30 a.m. Oct. 5. Parents with concerns or who want more information, can call the Public Health B Control Program Manager, at 735-7145 or 735-7157.

**GEORGIA: Tuberculosis Scare Patient Seeks to Sue CDC;** Associated Press; 9/14/10.

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ATLANTA – The patient at the center of a 2007 tuberculosis scare is asking a federal appeals court to revive his lawsuit against the Centers for Disease Control and Prevention. The 11th Circuit Court of Appeals in Atlanta will consider the patient's claims on Tuesday that the federal agency divulged private medical information during the scare. The patient became the first American quarantined by the federal government since 1963 after he flew from Europe to Montreal and drove over the U.S. border despite warnings from federal officials not to board another international flight. The CDC has said hundreds of passengers who traveled with the patient were tested and none was found to have tuberculosis.

**SOUTH CAROLINA: Charleston County Detention Center takes action to prevent TB;** Octavia Mitchell; WCBD TV; September 07, 2010

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The Charleston county Sheriff's Office says seven inmates have been diagnosed with Tuberculosis at the Charleston County Detention Center between August 2009 and April 2010. Spokesman John Clark says it is not known how much contact the inmates had with one another, as all the inmates were incarcerated at different times and in different parts of the jail. Of the seven, four were discovered to have TB after they left the CCDC. Three of the TB cases are infectious. (communicable) Although the current IT system at the jail cannot accurately identify all inmates who would have been in close contact with the infected inmates, some cell mates have been indentified and will receive letters from DHEC. Anyone who receives a letter should follow the directions contained therein. Anyone else with concerns that they may have been in close proximity with an infected inmate should call 723-3800 ext 4609. Clark says jails are notorious for being breeding grounds for infectious diseases like TB, due to the confined, close quarters in which inmates are housed; additionally, the inmate population is typically sicker than the general population. Inmates who are booked in and show symptoms of TB are tested at intake. If an inmate is housed for up to fourteen days they receive a physical examination which includes a TB skin-test. The same physical exam is performed on long term inmates annually.

**WASHINGTON STATE: Public-Health Agency Takes Rare Step of Detaining TB Patient;** Carol M. Ostrom; Seattle Times; September 2, 2010.

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A recalcitrant patient with an active case of tuberculosis — and a drinking-and-drug problem — was detained Wednesday by public-health officials intent on treating the patient and protecting others from the contagious disease. It's only the second time since 1986 that Public Health — Seattle & King County has sought a court order to detain a patient who resisted treatment. By law, the agency is allowed to do that, although Dr. Masa Narita, TB control director, said such action is always a last resort. "We have to do this in a very rare situation," Narita said. "We try our best so we can cure all TB patients in King County while we are protecting the public's health." Last year, there were 130 cases of tuberculosis diagnosed in King County, a number that's stayed relatively stable for the past decade. In this case, Public Health tried to get the patient to stay put and take the required medication for more than a month, using a regimen where a public-health worker watches the patient take the medication. The agency paid for a motel room, even groceries, for the patient. "We provide everything," Narita said. "You don't want to see

this person in the grocery store." But the patient began leaving the motel despite scheduled treatment appointments, refused to come to the TB clinic and delayed drug treatment — which the patient had earlier agreed to begin — because of illness from bingeing on alcohol or various drugs, including heroin. Eventually, the patient skipped so many treatments there was danger of the TB resurfacing, possibly with a drug-resistant strain, Narita said. "Of course, the detention is the last thing I want to do," he said. "But after many discussions, I really thought this would be the most appropriate option." Public Health officials cannot disclose details about the case because of federal privacy laws and because the court has sealed some of the case, including the patient's name, age and gender, as well as information about the location of the detention. The saga began July 21 at Swedish Medical Center, when the patient was diagnosed with a suspected case of TB. The diagnosis was later confirmed. Public Health's efforts to treat the patient continued until early this week, when Narita sought an order in King County Superior Court for a 72-hour detention. Because of the holiday weekend, that will expire Tuesday, when Public Health could ask for an additional 45-day hold. An entire course of treatment could last from six to nine months, although most people with active TB are only infectious to others for the first two to eight weeks of treatment. To be completely cured, a patient must complete the entire treatment. If treatment is interrupted, TB could re-emerge as a multi-drug-resistant strain. That's even more dangerous to the patient, who can become infectious for a longer period of time and require an even lengthier period of treatment. As a result of the diagnosis of active TB disease in a doctor employed by Sanford Health of Fargo, North Dakota, hospital officials said that family members who were in the room with patients visiting the doctor will also be tested. The hospital will notify 77 patients and 43 employees that they may have been exposed. Darren Huber, hospital spokesperson, did not know how many family members may have been exposed, but is contacting exposed patients to find out. Joan Cook, the Hospital Infection Control Manager, noted that most people who test positive for TB infection do not develop the active form. She said that the signs of disease do not show up in test results until eight weeks after exposure. This means results from the first patients exposed should be completed in the next few weeks, and those who were exposed later will not be tested for a few months.

**OHIO: Discovery on Mycobacterium tuberculosis can offer new approaches for TB prevention;**  
September 3, 2010: News Medical Net.

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One third of the world's population is infected with Mycobacterium tuberculosis (MTB), which leads to TB, a leading cause of death world-wide. A new discovery, led by a team of researchers from Case Western Reserve University School of Medicine, offers hope for new approaches to the prevention and treatment of TB. The team's discovery of a novel mechanism that may contribute to immune recognition of MTB is published in the September issue of *Nature Structural and Molecular Biology*. Most individuals with TB recover from the initial infection and become asymptomatic, but the bacterium persists for years, surviving largely inside macrophages, a type of cell that resides in the immune system. This presents a public health problem in that TB can reactivate and cause serious disease or death. Researchers and physicians know the body's immune system is capable of containing the infection but not curing it completely. It begs the question: "How does the organism survive in the human immune system for so many years?" For the past 15 years, Drs. Clifford Harding and W. Henry Boom of Case Western Reserve have been seeking the answer to this question. Their work indicated that MTB can inhibit the ability of macrophages to stimulate infection-fighting immune responses, and they identified that a protein on macrophages called Toll-like receptor 2 (TLR2) is involved in this immune evasion mechanism. TLR2 seems to be a two-edged sword in the complex immune response to MTB, as it helps some immunity mechanisms and inhibits others. Understanding the balance of these effects and the role of TLR2 may provide insights to design therapies for TB. "Understanding how MTB interacts with the immune system and how it can both activate and inhibit the immune response is critically important for the design of the next generation of TB vaccines. The persistence of infection is dependent on MTB's ability to manipulate our immune system to its advantage. The paradox here is that the MTB molecule, LprG, stimulates TLR2, one of the major receptors we have to identify disease-causing microorganisms. In this case, too much stimulation through TLR2 actually favors MTB by causing parts of the immune response to shut down," explains W. Henry Boom, MD, professor of medicine and director of the TB Research Unit at Case Western Reserve School of Medicine. The new studies show that the potency of LprG to induce these responses is explained by its combination of two mechanisms to activate TLR2: first, by directly

stimulating TLR2 and, second, by serving as a carrier to deliver other molecules that stimulate TLR2. This dual mechanism may drive stronger regulation of immune responses by MTB, and future vaccine development may be enhanced by designing approaches to use such mechanisms. Furthermore, the work indicates that LprG contributes to the assembly of the bacterial cell wall, suggesting that it may be possible to develop molecules to interfere with LprG function and potentially serve as new antibiotics to fight TB. The development of new antibiotics is an increasingly important goal, since resistance to existing antibiotics is becoming widespread. A multi-institutional partnership contributed to the overall success of this research initiative. Two important collaborative groups were led by James C. Sacchettini, PhD, Texas A&M University and D. Branch Moody, MD, Harvard Medical School. In addition, the project was spearheaded by Michael G. Drage and Nicole D. Pecora, two Case Western Reserve students in the MSTP Program, granting dual MD and PhD degrees, in collaboration with Jennifer Tsai, a graduate student in Dr. Sacchettini's group. "Our research team is composed of several collaborative groups that each contributed key components to this project. The synergistic way in which the team interacted was a perfect example of scientists working together to advance the study of a disease that detrimentally impacts the lives of so many across the globe. We look forward to continuing to advance this research together," says Clifford V. Harding, MD, PhD, professor and interim chair of pathology at Case Western Reserve School of Medicine. As they look to the future, the research team will work to gain a better understanding of immune responses in TB and hopefully design approaches to treat the deadly disease, including antibiotics or immunotherapies. Continued work will include study of the mechanism of immune-evasion by MTB with the hope of finding ways to reverse this mechanism so that it no longer causes a persistent infection.

**ILLINOIS: Progress Made in Limiting Kane County TB Outbreak;** Associated Press, September 1, 2010.

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In Kane County, Illinois, west of Chicago, health authorities are reporting progress toward containing a TB outbreak. Seventeen active cases, most linked to an Aurora homeless shelter, have been diagnosed this year. No new active cases have been found since late June, and a mass screening of nearly 200 people in August found no new cases. Another large-scale screening is planned for October. Health workers have been aggressive in their efforts to bring TB screening and education to the residents of local homeless shelters, said Tom Schlueter, spokesperson for the Kane County Health Department.

**WASHINGTON DC: New Test Seen as Big Advance in Diagnosing TB;** Associated Press, September 1, 2010, by Marilynn Marchione.

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A recent study has revealed that a new test is highly accurate at diagnosing TB and detecting resistance to rifampin in less than two hours with minimal hands-on time. Traditional culturing can take a week or more. Using a microscope to look for TB bacteria is faster, but can miss many cases and says nothing about resistance. "If you have 50 patients in a clinic and one person looking at a microscope, it could take hours and hours," said Dr. Anthony Fauci, director of the US National Institute of Allergy and Infectious Diseases. Among 1,730 patients with suspected drug-sensitive or multidrug-resistant TB, the automated molecular TB and rifampin-resistance test, Xpert MTB/RIF, correctly identified 98 percent of patients with smear-positive and culture-positive TB, more than 72 percent of smear-negative and culture-positive disease, and 98 percent of rifampin-resistant TB. The study found the test was 99.2 percent accurate in ruling out patients who did not have TB. Such an assay could "revolutionize TB care," according to Dr. Mario Raviglione, head of the World Health Organization's Stop TB Department. WHO planned to meet with experts in early September to review the data and make plans for next steps, he said. Further evaluation will see whether the Xpert MTB/RIF test can detect multidrug-resistant TB. TB that is resistant to rifampin is often resistant to another commonly used treatment, said Fauci. With relatively minimal training, a health care worker using the test could diagnose TB and rifampin resistance within 90 minutes, according to Dr. Catharina C. Boehme of the Switzerland-based Foundation for Innovative New Diagnostics (FIND), and colleagues. It takes only 15 minutes of manual labor to take the mucous sample, mix it with chemicals, and place it into an inkjet-like cartridge that goes into the \$30,000 machine. The test costs about \$63 in Europe, where it went to market last year. Cepheid, the test maker, pledges to offer

the test to developing countries for less than half that price and to discount the machine to \$20,000. The Bill & Melinda Gates Foundation supported the study, along with the US National Institutes of Health, while FIND designed, supervised, and funded it. The study, "Rapid Molecular Detection of Tuberculosis and Rifampin Resistance," was published in the New England Journal of Medicine

**MASSACHUSETTS: Tuberculosis and Stigmatization; Public Health Reports; 2010 Jul-Aug; Courtwright A, Turner AN.**

The institutional and community norms that lead to the stigmatization of tuberculosis (TB) are thought to hinder TB control. These researchers performed a systematic review of the literature on TB stigma to identify the causes and evaluate the impact of stigma on TB diagnosis and treatment. Several themes emerged: fear of infection is the most common cause of TB stigma; TB stigma has serious socioeconomic consequences, particularly for women; qualitative approaches to measuring TB stigma are more commonly utilized than quantitative surveys; TB stigma is perceived to increase TB diagnostic delay and treatment noncompliance, although attempts to quantify its impact have produced mixed results; and interventions exist that may reduce TB stigma. Future research should continue to characterize TB stigma in different populations; use validated survey instruments to quantify the impact of TB stigma on TB diagnostic delay, treatment compliance, and morbidity and mortality; and develop additional TB stigma-reduction strategies. From the Department of Medicine, Massachusetts General Hospital, Harvard Medical School.

**MARYLAND: How Research can help Control Tuberculosis; World Hospitals and Health Services; 2010;46(1):33-40; Chaisson RE, Harrington M.**

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Tuberculosis (TB) has played a central role in the history of biomedical science from Koch onwards. Research in the nineteenth and twentieth centuries yielded extremely valuable diagnostic, therapeutic and preventive tools for the control of TB. Following the development of shortcourse chemotherapy in the 1970s and 1980s, research into TB virtually evaporated. Despite the availability of an array of tools, TB control faltered, and the disease remains a major killer. The failure of the fruits of scientific research to control TB is a result of the shortcomings of the tools themselves as well the inadequate application of the tools in populations burdened by TB. A changing epidemiologic situation, with escalating rates of human immunodeficiency virus-related TB and the emergence of multidrug-resistant TB, further threatens global TB control. A robust TB research enterprise will be required to meet the global goals for controlling TB in the twentyfirst century. Basic research is needed to better understand its pathogenesis and immunology, and to identify targets for diagnostics, drugs and vaccines. Research into better biomedical tools to detect, treat and prevent TB is also a major priority, as all of the existing tools have important shortcomings. In addition, research into understanding how to apply both existing and new tools to control TB at the population level is urgently needed. Global funding for TB research, \$483 million in 2007, is slowly growing but is far behind need. To meet the ambitious goals of the Global Plan to Stop TB and the Millennium Development Goals, a massive investment in research will be necessary. From: Johns Hopkins University Center for Tuberculosis Research, Baltimore, Maryland, USA.

**MARYLAND: Active Tuberculosis and Recent Overseas Deployment in the U.S. Military; American Journal of Preventive Medicine. 2010 Aug. Mancuso, J.D., et al.**

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The risk of active TB disease resulting from military deployment to endemic areas is unknown. It has typically been assumed that the risk of TB approximates the risk among local nationals in that country. This nested case-control study assessed the putative association of overseas deployment with active TB disease among active-component US military service members. Deployment histories and other

exposures among 578 active TB disease cases and 2,312 controls matched on year of entry into service and length of service between 1990 and 2006 were compared in 2009 using multivariate conditional logistic regression. A significant association of deployments of 90-179 days was found, but this was inconsistent with the overall negative result. Significant associations were seen with foreign birth and nonwhite racial or ethnic groups. Overseas stationing in Korea was also found to be associated with active TB disease. No strong or consistent association was found between active TB disease and deployment, but an association was seen with long-term residence in TB-endemic countries (Korea). The strongest risk factors for active TB disease in the US military population were found to exist prior to accession into military service. These conclusions were robust in sensitivity analysis. From the Walter Reed Army Institute of Research, Silver Spring, Maryland.

**CANADA: The Ontario Universal Typing of Tuberculosis (OUT-TB) Surveillance Program--What It Means to You;** Canadian Respiratory Journal. 2010 May-June; Bolotin, S., et al.

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TB is a serious disease that is transmitted primarily by the airborne route. Effective disease control and outbreak management requires the timely diagnosis, isolation, and treatment of infected individuals with active disease; contact tracing to identify secondary cases likely to benefit from treatment of latent infection; and laboratory identification or confirmation of epidemiologically linked cases. TB genotyping enables the comparison of Mycobacterium tuberculosis complex (MTBC) strains and the identification of cases that may or may not be linked. The increased availability of molecular methods for genotyping has allowed for greater discrimination of MTBC strains and greatly enhanced understanding of TB transmission patterns. To improve TB surveillance and control in Ontario, the Public Health Laboratories of the Ontario Agency for Health Protection and Promotion introduced the Ontario Universal Typing of TB (OUT-TB) Surveillance Program. The first isolate from every new TB case will be genotyped with two rapid molecular methods: spoligotyping and mycobacterial interspersed repetitive unit-variable-number tandem repeat typing. MTBC isolates with nonunique genotypes and, thus, potentially linked to other TB cases, will also be genotyped by IS6110 restriction fragment length polymorphism analysis. By providing TB control programs using these new genotyping tools, and using traditional and new case investigation methods (eg, social network analysis), this new program will provide a clearer picture of TB in Ontario, and permit more effective use of public health resources and improve disease control.

**NEW YORK: Tuberculosis Reported at MTA Site;** Wall Street Journal, August 21, 2010, by Chris Herring.

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At least one Metropolitan Transportation Authority worker has been diagnosed with TB, the New York City Health Department said August 20, adding that its investigation might turn up more cases. In addition to the confirmed case, the department said it was aware of a suspected case at the same site, which it did not identify. Health workers were planning to visit the site to educate employees there about the disease.

**CANADA: Inflammatory Disease Drugs Could Hold TB Treatment Key;** Edmonton Journal, July 30, 2010, by Charlie Fidelman, Montreal Gazette; Postmedia News.

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Research by American and Canadian scientists suggests how the mechanism behind the anti-inflammatory drugs used to treat diseases such as rheumatoid arthritis might be important in the treatment of TB. The research in Nature Immunology describes how TB manipulates the process of cell death, or necrosis, allowing TB to escape and reproduce. Anti-inflammatory drugs may be able to help contain TB bacteria within the host's cell walls. Once the cells induce their own death in the immune response called apoptosis, TB bacteria would be unable to escape outside the cells walls, and therefore unable to reproduce and re-infect the host. The research describes the cellular pathway by which TB inhibits the progression of cell death in apoptosis and avoids activating the body's natural defenses. "We've discovered a mechanism that could be very important for immune response," said author Maziar Divangahi, of McGill University in Montreal. "We do have drugs that target that pathway. We need to test them. That's the next step," Divangahi said. Early treatment with anti-inflammatory drugs may be effective in coaxing the body's immune system to launch an attack against TB, Divangahi said. "It would be like

arming yourself in advance of TB contact.” The report, “Eicosanoid Pathways Regulate Adaptive Immunity to Mycobacterium tuberculosis,” was published in Nature Immunology 2010;11(8):751-758.

**NORTH DAKOTA: N. D. Doctor May Have Exposed Dozens to Tuberculosis;** Associated Press, August 27, 2010.

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A doctor in the Sanford Health system’s Fargo, North Dakota, region has been diagnosed with active TB disease, and efforts are underway to contact dozens of patients and workers who may have been exposed. Sanford Health intends to offer TB testing to 77 patients and 43 employees who were in contact with the doctor between July 1 and Aug. 16. The North Dakota Department of Health is assisting Sanford Health.

**DELAWARE: State to Conduct TB Testing at Appoquinimink High;** Community News (Hockessin), August 16, 2010.

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The Delaware Division of Public Health has identified 80 students potentially infected with TB at a high school in Middletown, where a student was diagnosed with the disease. An Aug. 12 letter from the state and the school district notified the families of the at-risk students. The ailing student was in school only briefly at the end of the last school year. “In this case, transmission is highly unlikely, and the strain is easily treatable,” said Dr. Herman Ellis, DPH’s medical director. The initial student has been treated and is not contagious. DPH and the school district held an informational session for parents and the community at the high school; TB skin tests were administered afterward and will be read by DPH staff two days later. Free TB tests also will be administered on Aug. 23 at the Hudson State Service Center, 501 Ogletown Rd., Newark.

**TEXAS: Country Club Employee Diagnosed with Tuberculosis;** KVUE.com (Austin), August 11, 2010, by Noelle Newton.

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Barton Creek Resort and Spa in Travis County, Texas, reported that an employee is on medical leave for TB. The facility “has taken all necessary precautions regarding this issue and has been assured by the Austin Health and Human Services Department that there is no risk or cause for concern for our associates, members, or guests,” said a statement issued by Kelly Clarke, Director of Marketing. Dr. Michael Kelley of the county TB clinic declined to confirm the case but said anyone deemed at risk of infection would be contacted and tested. Travis County records 45 to 50 TB cases annually, he added.

**FLORIDA: Seminole Ridge Students Who Didn’t Take TB Test Will Be Turned away Tuesday;** Palm Beach Post, August 16, 2010, by Laura Green.

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The students and faculty members at a Palm Beach County high school who did not show proof of TB screening have been asked to not return to school on the first day. After a student was diagnosed with TB disease in the spring, the Palm Beach County Health Department conducted free skin tests at the school for 252 contacts in June and early August. The test showed that 19 individuals tested positive for TB infection and will have to undergo further testing. Also, a student at an elementary school was diagnosed with TB disease around the same time. Of 112 contacts tested at the elementary school, 38 tested positive for TB infection and need further testing. The two index patients are expected to return to school.

**CANADA: TB Cases Hit Record High in Nunavut;** CBC News, August 17, 2010.

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So far this year, Nunavut has reported 81 cases of TB, the highest number of TB cases in more than a decade. Before this, the record was 58 cases in 2008. Dr. Geraldine Osborne, Nunavut’s Deputy Chief Medical Officer, commented that the number of cases has been growing over the past few years, but not to the extent as they have this year. She blamed social conditions such as overcrowding with poor

ventilation in houses, poor nutrition, and addictions for its spread. According to health officials, one third of the patients are in the 15- to 24-year-old age group. Dr. Osborne noted that younger people tended to ignore symptoms and wait longer to seek medical attention. The health department is urging individuals to be aware of the symptoms and get tested if they have them. Nunavut's health department is using its own staff as well as utilizing staff from other health programs within Nunavut, including clerical workers and nurses, to help contain the spread of TB in communities.

**MINNESOTA: Settlement Approved in Ramsey Jail TB Case;** StarTribune.com, August 17, 2010, by Chris Havens.

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US District Judge Richard Kyle approved a multimillion-dollar settlement between Ramsey County and former inmates of the county's workhouse who contracted TB in 2008. The inmates sued in October of 2008, claiming that the county did not properly test an infected inmate. The settlement covers inmates who were at the workhouse between April 17, 2008, and June 9, 2008, and amounts to \$6.5 million in base payments, but this amount could rise later depending on how many inmates develop complications from the disease. About 170 former inmates tested negative and 93 tested positive for latent TB infection (LTBI), and seven were diagnosed with active TB disease. Approximately 200 inmates still need to be tested. Inmates who have active TB disease will receive a one-time payment of \$250,000 and free annual check-ups. They could get up to an additional \$250,000 if complications arise related to the original diagnosis. People with latent TB will get one-time cash payments of \$54,300 if they prove they have completed treatment; those who do not receive treatment will get \$44,300. Annual checkups will be free. If someone with LTBI develops active TB disease, the payment will increase to \$200,000. Inmates who have not yet been tested will be offered screening and will be eligible for benefits if they have either form of the disease. Inmates and former inmates who test negative for TB will receive no benefits. By agreeing to the settlement, the county admitted no fault.

**TEXAS: Employee at popular country club diagnosed with tuberculosis;** Noelle Newton; KVUE News; August 11, 2010.

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An employee at Barton Creek Resort and Spa in Travis County is on medical leave for tuberculosis. Kelly Clarke, director of marketing for the resort, released this statement: "Barton Creek Resort & Spa has taken all necessary precautions regarding this issue and has been assured by the Austin Health & Human Services Department that there is no risk or cause for concern for our associates, members or guests." The health department would not confirm the case. However, according to a Dr. Michael Kelley at the county tuberculosis clinic, you would be alerted and tested if you were at risk of catching it. Kelley says there are 45 to 50 cases in the county per year. He says the disease typically spreads to those in close proximity with someone who is diagnosed. People who share indoor space where germs can stick around after coughed out are most at risk. He says if someone is diagnosed who works in a public place such as the resort, they would do a contact investigation which starts with family members. "We test those people and if we find a higher rate of infection in close contacts then we look elsewhere. Where did they work? Who did they ride with to go to work? We keep expanding the contact investigation until in the last group we test we don't find any higher rate of infection than we would expect to find in the general population," Kelley said. According to the American Lung Association, tuberculosis is a highly infectious disease usually attacks the lungs. It is spread from person to person. When a person diagnosed coughs, laughs, sneezes, sings or even talks, the germs may spread through the air. Symptoms of tuberculosis include persistent cough lasting over two weeks, weight loss, fever and night sweats. One of those symptoms should not be cause for concern. Kelley says if you have several, it's good to see a doctor. The disease is rarely fatal. Those who die from typically have another medical condition.

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**WASHINGTON: County to Spend \$105,000 to Keep Virulent TB Strain in Check;** HeraldNet, August 8, 2010, by Sharon Salyer.

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According to public health officials, by the end of the year, it will cost about \$105,000 to treat two patients with multidrug-resistant TB in Snohomish County, Washington. The patients were diagnosed in April of 2010. Treatment costs are being covered by a special \$250,000 health district fund for TB emergencies. The largest expense so far has been the cost of hiring an additional public health nurse to help with their care. Dr. Gary Goldbaum, Health Officer for the Snohomish Health District, calculated that the nurse's salary and benefits will be approximately \$64,000 by the end of the year. Medications for the first three months of treatment totaled \$2,380. Other expenses have included lab tests, food, and supplies for the patients who must remain isolated to prevent transmitting the disease. Nurses visit the patients twice a day to ensure that the medication is taken as prescribed. The nurses also monitor the patients' conditions, including mental health, as the medications sometimes cause psychological problems such as depression. Because of privacy concerns and the stigma associated with the disease, the health district is not disclosing the patients' age or gender, but has stated that the two patients are not related.

**GEORGIA: Kazakh Delegation to Study TB Control;** Atlanta Business Chronicle, August 13, 2010, by Julie Bryant Fisher.

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Recently, the state of Georgia's Council for International Visitors (GCIV) hosted a special delegation from Kazakhstan who were studying how to manage TB by visiting Georgia's leading health care institutions and organizations. The delegation, which arrived in Atlanta August 4, studied successful US models for management and social support of TB patients. The three-week Community Connections exchange program was funded by the US Agency for International Development (USAID). The Kazakh delegation included doctors, nurses, government representatives, leaders of nongovernmental organizations, and prison system officials. In Georgia, the delegation will be introduced to US protocols for TB contacts, tracing care for socially disadvantaged patients, patient education, infection control measures, the rights of US TB patients, reducing stigma, TB treatment in correctional institutions, and transition support when incarcerated TB patients are released.

**CANADA: Tuberculosis Breakthrough Announced;** News Fire, July 30, 2010, by Robert Valenzuela.

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Dr. Maziar Divangahi of McGill University and the Research Institute of the McGill University Health Center stated that there may be an opportunity to improve TB vaccination and treatment using existing drugs. He explained the process by which TB-causing bacteria enter the body through the oral cavity, and white blood cells or macrophages engulf and encapsulate, but are unable to kill the bacteria. The bacteria undergo a type of hibernation and propagate inside the engulfment until the macrophages can hold them no more. The macrophages break apart, allowing the spread of the infection in the body. Normally macrophages trap bacteria inside their cell membranes and the bacteria die slowly, but this does not work for TB bacteria. TB bacteria have a system called necrosis, which destroys cell membranes aiding the bacteria's escape. Dr. Divangahi focused on exploring the use of elcosanoids. He noted that elcosanoids can work with or against macrophages in relation to TB bacteria. Analysis of human genes found that changes occurring in the presence of elcosanoids will either produce immunity or susceptibility to TB. Elcosanoid-producing drugs are available and are used in treating other inflammatory diseases. Dr. Divangahi predicted that the next steps will be to determine how these drugs can be used to treat TB.

**GEORGIA: Reports of sick travelers climb;** Alison Young, USA TODAY.

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Federal health officers logged more than 3,000 cases of potentially infectious diseases among travelers in the past year, including airline passengers with tuberculosis, whooping cough, measles, mumps and typhoid fever, according to Centers for Disease Control and Prevention data obtained by USA TODAY. Reports to the CDC of sick travelers were up significantly in the past year, largely because of increased reporting of flulike symptoms in the wake of the H1N1 pandemic, data show. Since 2007, the CDC's regional quarantine stations — centers at 20 airports and other ports of entry that monitor air, sea and land travelers' illnesses — have received about 7,000 reports of potentially infectious diseases, records obtained under the Freedom of Information Act show. Reports come from airlines, cruise ships, immigration officials and CDC staff, as well as local health departments that learn of sick travelers after trips are over. The initial diagnoses include thousands of cases of flulike illness and gastrointestinal disease, as well as tuberculosis— 662 reports, most involving air travel. A 23-year-old woman with multidrug-resistant TB and a persistent cough flew Dec. 22 from Poland to Chicago. Travelers who sat near her were contacted and the CDC has found no evidence she spread the disease, Marano says.

**PENNSYLVANIA: Sanatoriums in Pennsylvania Treated Thousands for Tuberculosis:** Morning Call (Allentown, PA), July 12, 2010, by Chuck Felton.

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“To the patients housed there, it was called simply ‘the san,’ a part of Pennsylvania history that has nearly been forgotten. The Cresson Sanatorium for TB patients was located a few miles to the east of the small town of Cresson. Records show that between 1913 and 1964, when it ceased operation, more than 40,000 men, women, and children were admitted for treatment. The majority of them stayed for years before being discharged as cured, but a number of them died there. Its 2,600-foot altitude assured an abundance of fresh air. Up until the mid-1940s, when antibiotics were discovered, there were no drugs available. Before the introduction of drugs in 1945, lung-collapse therapy brought new hope to the physicians and patients to help speed recovery. The theory was that a collapsed lung would achieve more rest and heal quicker. One method was a surgical procedure in which sections of several ribs by the infected part of the lung were removed, with the remaining rib sections allowed to sink in and collapse the lung, a procedure that often left the patient disfigured. Another method, called pneumothorax, which had no serious side effects, consisted of injecting air into the pleural cavity to collapse the lung. My knowledge of the Cresson Sanatorium comes from firsthand experience. In 1955, when I was 17 years old and a senior at Towanda Valley High School in Towanda, I was looking forward to graduating from high school and enrolling at Penn State that fall. But my plans suddenly changed, when in March 1955, I was diagnosed with pulmonary TB and was sent to Cresson Sanatorium, where I spent 18 months recovering. I was fortunate that in 1955, effective drugs, such as the antibiotic streptomycin, were available. I also received pneumothorax treatments during my 18 months at the sanatorium and continued them at a local hospital for an additional year after my discharge. A year in bed can seem like an eternity to a 17-year-old. To its credit, the sanatorium did its best to provide entertainment and recreation for the patients.” The author has been researching the history and personal stories of Cresson Sanatorium, website: <http://www.feltondesignanddata.com/cressontbsanatoriumremembered/>

**CANADA: Labrador TB Cases on Rise:** CBC News, July 27, 2009.

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TB cases have increased in Labrador in 2009; there are 14 confirmed cases compared to one-half of that number during the last outbreak in 2006. Dr. Muna ar-Rushdi, Medical Officer of Health for the Labrador-Grenfell Health Authority, commented that most of the TB patients live on the north coast. She stated that to stop the spread of TB, all contacts of the 14 patients must be tested. She said it is difficult to determine exactly how many people have been affected, as people can be infected without showing signs of illness.

**ILLINOIS: Health Department Launches TB Web Site;** Lake County News-Sun, July 22, 2009,

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The health department in Lake County, Illinois, has launched a web site providing TB resources for residents of the county and the business community. The site provides information on high-risk groups, screening services, and links to TB information and resources by the Centers for Disease Control and Prevention (CDC). A compact disc containing the same information is available for employers and schools. The health department also encourages members of high-risk groups or persons who have contact with high-risk groups to be screened for TB.

**CALIFORNIA: Phone Gadget to Diagnose Disease;** BBC News, July 22, 2009.

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Researchers led by David Breslauer of the University of California, Berkeley, have developed a device that functions as a portable microscope when attached to a mobile phone. The device, called a CellScope, works as a fluorescence microscope and can identify markers of disease. The researchers used a standard mobile phone handset, with a 3.2 megapixel camera. The microscope attachment, which includes a holder for tissue or fluid samples on glass slides, clips to the camera and uses the built-in camera to process the images. It uses cheap commercial light-emitting diodes as the light source -- in place of the high-power, gas-filled lamps used in the laboratory device -- and cheap optical filters to isolate the light coming from the fluorescent tags. Using the device, the team was able to identify TB bacteria in a sample. Breslauer said that the use of the mobile phone also gives access to the computational power of the phone and the mobile communications aspect. It is suggested that this device would be useful in the developing world and rural areas that are distant from hospitals, power, and laboratories, but where mobile infrastructure is well-established. The team is in the process of making a more robust, "field-ready" version for field testing and clinical trials. The research is published in the July 22, 2009 issue of the online journal PLoS One.

**MISSISSIPPI: More Than 60 Hinds Prisoners Infected with Tuberculosis;** WJTV, Jackson MS, July 20, 2009, by Ross Adama.

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When three inmates at Hinds County Detention Center were recently diagnosed with TB, the state health department examined all the inmates and found 66 persons who tested positive for infection with the disease. State health professionals believe that 41 inmates were already infected with TB before being imprisoned. Sheriff Malcolm McMillin urged county supervisors to approve funds to hire five new nurses to monitor the inmates. The mother of one of the inmates expressed her concern and wondered why the public had not been informed about the situation, and whether her son and the others were at risk.

**NORTH CAROLINA: Tests Show TB Outbreak Contained at Brunswick Jail;** Star-News (Wilmington), July 14, 2009, by Vicky Eckenrode .

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Follow-up chest X-rays taken of 35 inmates and staff with TB infection at a county jail show no signs of active TB disease, county health officials said July 14. Recently, the county tested all inmates and workers at the jail, after a former inmate and his cellmate tested positive for TB infection. Both are now being treated for active disease. The 35 people who tested positive for TB infection are not contagious, and they will be treated for six months as a precaution. "We're training the jail health people and having them sign-off any time they see [inmates receiving treatment] take a pill," said Don Yousey, the county health director.

**CALIFORNIA: Parkinson's Drug Shows Promise against Drug-Resistant TB;** ALL HEADLINE NEWS; July 6, 2009, by David Goodhue.

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According to researchers at the University of California, San Diego, drugs used to treat Parkinson's disease could also be used to treat extensively drug-resistant TB (XDR TB). Philip E. Bourne, a professor of pharmacology at

UCSD, said that current drug-resistant TB drugs are highly toxic, and the Parkinson's drugs entacapone and tolcapone are safe and have binding properties that can be used to treat different conditions. Bourne and colleagues used the selective optimization of side activities (SOSA) approach when they identified the two drugs as candidates against TB. SOSA involves using old drugs to fight conditions that they were not originally intended to treat. Since the drugs already have US Food and Drug Administration (USDA) approval, using them saves time and the cost of developing new drugs. The study was published in the July 3, 2009, issue of PLoS Computational Biology.

**ALABAMA: Targeted Tuberculosis Contact Investigation Saves Money without Sacrificing Health:** Journal of Public Health Management and Practice. 2009 Jul-Aug; Pisu, M., et al.

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Health departments require an efficient strategy to investigate individuals exposed to Mycobacterium tuberculosis. The contact priority model (CPM) uses a decision rule to minimize testing of low-risk contacts; however, its impact on costs and disease control is unknown. A cost-effectiveness analysis compared the CPM with the traditional concentric circle approach (CCA) in a simulated population of 1,000 healthy, community-dwelling adults with a 10% background rate of latent TB infection. The analysis was conducted from the perspective of the Alabama Department of Public Health. Model inputs were derived from the literature and the Alabama Department of Public Health. Lifetime costs (2004 dollars) and outcomes were discounted three percent annually. Incremental cost-effectiveness ratios were used to compare the strategies. Over the lifetime of 1,000 simulated contacts, the CPM saved \$45,000 but led to 0.5 additional TB cases and 0.24 fewer years of life. The CCA is more effective than the CPM, but it costs \$92,934 to prevent one additional TB case and \$185,920 to gain one additional life year. The CPM reduces costs with minimal loss of disease control and is a viable alternative to the CCA under most conditions. From the Division of Preventive Medicine, University of Alabama at Birmingham.

**NEW JERSEY: The Challenge of Multisite Epidemiologic Studies in Diverse Populations: Design and Implementation of a 22-Site Study of Tuberculosis in Foreign-Born People;** Public Health Reports. 2009 May-Jun; A.L.Davidow, et al.

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The researchers designed a population-based study of the epidemiology of TB among foreign-born people in the United States and Canada. Challenges included standardizing recruitment and data entry at 22 sites, enrolling individuals who did not speak English and may be undocumented, and obtaining clearance from 36 institutional review boards (IRBs). Stratified sampling was used to recruit patients through the TB Epidemiologic Studies Consortium, a research consortium funded by the Centers for Disease Control and Prevention (CDC). Because recruitment sites were overseen by more than 30 local IRBs, the researchers developed a simple process to designate a central IRB. They translated instruments into 10 main languages, arranged for fast translation of consent "short forms" into other languages, used one telephone interpretation service at all sites, and provided extensive interviewer training including mock interviews with simulated patients. The researchers interviewed 1,696 participants in 19 states and provinces. Participants from 99 countries were interviewed in 40 languages. Of these, 23 % did not speak English at all; 64% needed an interpreter. More than 20% of participants reported they were undocumented. Participants' age, gender, and birthplaces were broadly similar to those of the target populations. One-third of local IRBs used the central IRB. Special confidentiality protections, substantial resources for translation and interpretation, and a centralized IRB made possible the recruitment of a representative sample of foreign-born people. The approaches may be applicable to studies of other diseases in multinational populations in the United States and Canada. From the Global TB Institute & Department of Preventive Medicine & Community Health, New Jersey Medical School, Newark, N.J.

**KANSAS: Case of Tuberculosis Confirmed at Johnson County Community College;** Kansas City Star; 07.10.10.

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For the second time since February 2009, health authorities are investigating a case of TB at Johnson County Community College. "The [JCCC] staff is working closely with us to ensure that students are

informed and aware of their exposure and testing options," said Nancy Tausz, director of the Johnson County Health Department's disease containment division. It is not likely, she said, that the disease was spread through contact at the college.

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**If you wish to receive the Stop TB USA messages at a different e-mail address, or if you no longer wish to receive these messages, please reply to [jseggerson@tbcoalition.com](mailto:jseggerson@tbcoalition.com)**

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