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Critics blast privatization attempt by state-run public health centers

Pennsylvania pilot project crashes and burns, report charges

When the state of Pennsylvania proposed two years ago to privatize 60 of its public health centers, the intent was to save taxpayers some money. Instead, critics charge, what happened is a case study in what can go wrong when people who don't understand how public health works try to tinker with it.

At three pilot projects approved by the state legislature, and at 29 other state health centers where staffing was reduced, problems include TB patients lost to follow-up, poor record-keeping, and inadequate TB infection-control practices, says **Steve Lopez**, the lead investigator and author of a report released late last year, which lambasted the privatization efforts. Lopez, a doctoral candidate in sociology at the University of California at Berkeley, is a research analyst at Keystone Research Center, a nonprofit think-tank based in Harrisburg, PA, which frequently investigates issues related to public health.[1]

> **"There are no mothers' marches against TB. It's not like fluoride in the water — it doesn't affect you and me."**

"People we've interviewed say these changes may not immediately lead to an outbreak of TB, but that they weaken the infrastructure and reduce our ability to know about one and deal with it if it occurs," explains Lopez.

Other critics are even blunter and say the pilot projects, which were to have been stopped and evaluated by the end of the first year, need to be scuttled altogether. "They should stop the pilots — just shut them down," says **Ed Powers**, who recently retired from his post as manager of the state health department's division of sexually transmitted diseases. Powers also was a onetime state health adviser with the Centers for Disease Control and Prevention. As a self-professed advocate of privatization, Powers takes pains to emphasize he's not opposed to the principle of privatization in public health; he simply disapproves of the way the state has implemented the change. As for the premise that the system in its original form is inefficient and wasteful, he says, "there's some truth to that."

In addition, the staff cutbacks enacted at many of the remaining health centers were never sanctioned by the legislature, which instead had directed that services should be kept at current levels in all but the pilot programs, Lopez adds.

Lopez and Powers agree that in this case, politicians and health department officials alike proceeded without a clear understanding of how the system worked before they set about dismantling and replacing it.

Understanding the universe of TB

"There's very little understanding of what public health nurses do," says Powers. "And there's very little understanding of TB patients and of that whole universe around the TB patient — the tests, the medications, the follow-up, the DOT [directly observed therapy]."

The two say trouble began when the state's former secretary of health, acting at the behest of the governor, declared that the state-controlled public health system was wasteful and that he intended to replace it with private providers. At first glance, says Powers, the idea looked pretty good; after all, many of the state's big urban areas (where the majority of TB cases are concentrated) are served by their own county-based public-health clinics. That leaves a mix of mostly rural and urban counties, with relatively few TB cases each year, served by one of the 60 state clinics.

By privatizing those 60 state clinics, the health secretary said, it would be possible to save $1 million the first year and $8 million each subsequent year.

According to Powers, however, the secretary's announcement of the privatization plans had the effect of swiftly and thoroughly alienating the entire public health infrastructure at the state level: "No matter what the guy said after that, he didn't have any of them on his side," he says.

In any case, the state legislature put aside wholesale abolition, opting instead to phase in privatization slowly by establishing three pilot projects in three counties. The pilots were to perform screening and administer TB treatment, along with other duties (screening and treatment for sexually transmitted diseases, HIV testing and counseling, and childhood immunizations).

Nonclinical duties were relegated to district-level offices, where public health nurses were supposed to perform follow-up, including DOT, and to keep track of epidemiology.

What happened next was a combination of bad luck and shortsightedness, says Lopez. The three pilots were contracted out to three agencies — two Visiting Nurse Associations and a private hospital. The VNAs, in turn, subcontracted their duties to two branches of Planned Parenthood Federation of America.

But the local Planned Parenthood organization suffered a money crunch that forced it to cut back hours, and the private hospital was gobbled up in a merger. Without a public health clinic to fall back on, the result was chaos, say Lopez and Powers.

For example, even though clients were comfortable with Planned Parenthood staff and knew the clinic locations, the five other locations where patients were directed to go during the Planned Parenthood cutback were less accessible and much less familiar to patients, says Powers.

The private hospital, now swallowed up in the black hole of a merger, in the process had lost a Latino physician whom patients in the city had liked and trusted, Lopez says. To make things worse, adds Powers, "nobody [at the hospital] knew any longer who was in charge of anything; there was nothing solid to go back and touch, no one to say they'd made this [subcontracted] commitment."

In time, a physician on staff was duly appointed to take care of state health center patients, he adds. But again, a lack of understanding of public health posed a stumbling block. "What [private-sector] doctors understand is that when their patients make an appointment, they keep it," Powers says. "What they don't understand is that a patient who's got three kids and no income, and whose

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boyfriend is giving her a hard time, probably isn't going to keep that TB appointment she's made, now that she's feeling better."

The same lack of understanding resulted in occasional bunglings of TB infection-control practices, Powers and Lopez say. In some situations, "they didn't have the right air exchange," says Powers. "They were going to have their TB clinics next door to the well-baby clinics and the HIV clinics. And why not? That's not the kind of thing that's written down somewhere."

At the same time, the state began shifting nurses at approximately half the other state health clinics up to district-office levels, even though those health centers weren't involved in pilot programs, Lopez says. That had the dual effect of leaving nurses at the local level short-handed, and those bumped up to district level feeling out of sorts for a variety of other reasons, says Lopez.

For one thing, nurses in district offices found they were spending a lot more time driving. In addition, now that they were charged with performing follow-up and DOT on all TB patients in the district, patients began complaining that they disliked being asked the same set of questions by two people in succession, and some patients were lost to follow-up, Lopez says.

Not enough data to evaluate?

Meanwhile, pilot projects also had trouble relaying data to the University of Pittsburgh, where the state had charged researchers to do the officially sanctioned investigation of the pilot projects, Lopez says. Citing a lack of useable data, the university asked for — and received — two substantial extensions for the deadline by which the assessment was to have been completed.

Gary Marsh, PhD, a professor of biostatistics at the university's graduate school of public health, flatly denies the school has felt pressure (as some critics have charged) to produce a favorable report on the project.

"I have no vested interest at all in this," he says. The problem with information flow is one the state ought to have anticipated, he adds. "A lot of these people [at the pilot projects] simply weren't trained to provide the information we need in a format we could use," he says. "That's not uncommon in such situations. But we've provided some assistance, and I think we're over that hump." Marsh also is critical of Lopez' report. "I wouldn't place much weight in it," he says. "It's based on a lot of anecdotal information."

Lopez denies the charge of subjectivity. "To understand how the network is working, you have to talk to people," he says. "We also used Department of Health internal audits. We have hard data on how the number of patients has plummeted by as much as half [in one STD clinic]. There's nothing biased about that."

"We do feel the keystone report was anecdotal, but that doesn't mean we're ignoring it," says **Megan Neuhart**, a spokeswoman for Gary Gurian, the acting secretary of health. "We're waiting for the University of Pittsburgh to do a complete and nonbiased study, and we're going to await judgment until we see that report."

Powers argues that the time has passed for collecting more data. "The state could have done a much better job of looking down its own throat," he says. "We know as much as we need to know that it's time to shut these pilots down."

Though Powers agrees with Marsh that Lopez' report is heavily critical, he adds that he made the decision to cooperate with Keystone investigators because he feared the consequences to public health that might otherwise result. "There are no mothers' marches against TB," he says. "It's not like fluoride in the water — it doesn't affect you and me." Nor is privatization by definition a bad thing, he says. "We've learned a lot from these pilots. Now we need to take the [idea] back and fix it."

Lopez agrees the pilots should be shut down. Also, his report says the state should conduct an assessment of its public health system to monitor health problems; the department of health should restore staffing in state health centers; a best-practice study in public health delivery should be carried out; and an audit of the true costs of the pilot projects should be conducted. (Ironically, he claims, in at least some instances, the pilots have charged the state more than the health centers for the same services.) Lastly, the report says, hearings should be held "to define a Pennsylvania public health strategy for the 21st century."

[For a copy of the Lopez report, readers can contact Keystone Research Center at (717) 255-7181. Fax: (717) 255-7193. E-mail: KeystoneRC@aol.com.]

Reference

1. SH Lopez, LM Rhodes, SA Herzenberg. *The Quiet Dismantling of Public Health: The Impact of Pennsylvania State Health Center Privatization and Staff Cutbacks.* Harrisburg, PA: Keystone Research Center; 1998. ■

Interview failures boost rates for black children

Outreach workers will receive more training

What's going on with African-American children in Alabama? That's a question TB researchers have been trying to answer since 1990, when cases among black children began a steady rise that has shown no sign of stopping.

Many of the childhood cases are the result of contact investigation failures, research suggests. Failures can occur when investigators don't probe hard enough or when patients or their families decide to stonewall the investigation, says **Michael Kimerling**, MD, MPH, lead researcher and assistant professor at the schools of medicine and public health at the University of Alabama in Birmingham.

To some degree, the rise in case rates among black children simply reflects two bigger shifts in the epidemiology of the disease, Kimerling says. "More and more, TB is becoming a disease of minorities, and at the same time the median age of cases is dropping."

Even so, TB controllers in the state were struck when, in 1996, the line tracking case rates among black children and the line for tracking them among white adults actually crossed. "We felt that was extremely significant," Kimerling says.

When he and others began to analyze what kinds of cases among African-American children could have been prevented, they found four kinds of problems at work, he says.

The first were communication problems between states, which can take the shape either of poor communication or none at all, he says. That is, investigators in one state fail to find out their patient has family in another state, or they fail to let TB controllers in another state know about the family. "So later we find out there's an aunt or uncle from Detroit, for example, who came to spend Christmas . . . and a childhood case has occurred," Kimerling says.

The second problem is the failure of adult patients to complete prophylaxis. Adults who develop active disease as a result may infect children; the children frequently go on to develop active disease themselves.

In other instances, contact investigations don't proceed in a timely fashion, and children are infected and develop TB.

The fourth problem, interview failures, appears to be most significant, but it also is the most complicated, Kimerling says. Often, the trouble isn't that interviewers fail to bring up the topic of children; rather, it's that they don't succeed in getting accurate information.

Why families and patients don't tell

The idea that subjects would withhold such information intentionally may strike outsiders as puzzling. Why, after all, would an adult choose to risk the life of a child by not disclosing her existence? How could an investigator fail to discover whether there are children in the household?

Michael Holcombe, Mississippi's state TB controller, agrees with Kimerling that it's not uncommon for adults to withhold information about children. He recalls one such case vividly: Family members conferred among themselves and decided that an infant in the household hadn't undergone enough exposure to warrant naming him. Tragically, the infant subsequently developed TB meningitis and died.

Other times, the logic behind the decision to withhold information reflects a subject's personal priorities. A man may be reluctant to name youngsters in a household where he's living surreptitiously, for fear the family will be evicted or otherwise penalized. A busy single mother, dreading the prospect of having to take her kids to a public health clinic for months of preventive treatment, decides it would be easier not to disclose her children's existence.

Whatever the circumstances that contribute to the problem of interview failure, Kimerling says his state will put outreach workers and others responsible for investigations through a course of retraining. The idea is to make investigators more alert to obstacles in the investigatory process and teach them how to make sure they ask the right questions, he adds.

Holcombe and Kimerling concede that in some situations, no amount of investigation will uncover children as contacts. The aim is to minimize such occurrences, they say.

"You've got to work smart as well as hard in a contact investigation," Holcombe says. "You have to be a good observer." That means that first off, investigators must make sure they spend time in a patient's home, he says.

"You have to look at what kinds of pictures are on the wall, or sitting out on dressers and

tables," he adds. "Notice who's running in and out of the house, who's playing in the yard, who's coming to visit. Pay attention to the local chitchat among the neighbors." Such activities are time-consuming, of course, and time isn't always a luxury that's available to busy public health nurses who may be juggling dozens of priorities, he adds.

Besides time, another important factor often lacking in contact investigations is experience, adds Holcombe. "Often it's the most inexperienced staff who do follow-up on TB cases," he says. "Let's face it: TB's not the most popular program. It's hard work, and you're dealing with patients not just for a few days, but for months on end." ■

RIF/PZA reconsidered: Is a third month better?

For HIV-negative patients, perhaps, Sbarbaro says

Two months of rifampin / pyrazinamide (RIF / PZA) may not be enough to prevent tuberculosis in HIV-negative patients infected with TB, says **John Sbarbaro**, MD, professor of medicine at the Health Sciences Center of the University of Colorado. In HIV-negative people, Sbarbaro reasons, mycobacteria may not be active enough to stand up, so to speak, and catch the bullets being fired by quick-draw rifampin.

Since the converse situation applies in HIV-positive people, the two-month regimen can be expected to work fine for them, Sbarbaro adds. "If more bugs are beginning to activate because the macrophage isn't controlling them as well, my bet is that rifampin will kill them quickly — and two months will probably be enough," he says.

At the Centers for Disease Control and Prevention — which officially has approved the new regimen for HIV-positive patients and recently gave clinicians an unofficial go-ahead for using it on HIV-negative people as well — the response to Sbarbaro's latest fraternal assault is philosophical.

"I'm actually a little surprised John has anything at all good to say about the regimen," says **Rick O'Brien**, MD, chief of the research and evaluation branch of the CDC. "You should see the e-mail that's been flying back and forth."

Still, his friend in Colorado may have a point, O'Brien concedes, since there's scant evidence as to how well RIF / PZA will work on HIV-negative co-infected patients. After all, HIV-negative patients weren't among the subjects in landmark studies of the new regimen. "With the exception of a small pilot study done by the CDC, along with some related studies in Poland and Berlin in the late '80s, there's been little experience with the two-month regimen of RIF / PZA in HIV-negative people," O'Brien says.

'He said, he said'

So for now, it's one man's hypothesis against another's, he adds. "But there are intelligent people who've looked at the data and who say that recommending this regimen for HIV-negative people makes sense. Plus, it represents a considerable improvement in our ability to treat people with latent TB infection."

Sbarbaro says his misgivings derive not only from a lack of data about the use of the regimen in HIV-negative people, but also from adding up what's known about competent immune systems and the way rifampin works.

"One thing that's always interested me, and that I've tried to study for years, is how do macrophages contain and control TB," he says. "Whatever the macrophage does, it manages to control that growth for a long period of time. If you're HIV-positive and not taking these fancy new antiretroviral drugs, your macrophages are probably becoming progressively weaker, since when your CD4 count drops below 400 you start getting TB."

Rifampin works well on an HIV-positive patient, he continues, but only because in an immunocompromised patient, the TB bacilli have begun actively metabolizing. Research carried out by Denny Mitchison, the eminent British TB expert, shows that this is how rifampin operates, he adds.

In that experiment, Mitchison inoculated two culture plates with TB, allowed the bacilli to grow at room temperature, and then chilled the plates to 8° C, Sbarbaro says. Once the cultures stopped growing, Mitchison anointed one plate with rifampin and the other with isoniazid.

He then re-warmed the culture plates and let the bacilli grow for six hours. He then re-chilled them, rinsed off the antibiotics, and warmed them back up. The results? Six hours of exposure had wiped out the TB bugs on both plates.

But in a second round of the same procedure, Mitchison altered one condition: After the first chilling, the initial warm-up was limited to only one hour. Then, as before, there followed another chilling, a washdown, and a second re-warming.

This time, the bacilli on the rifampin-dosed plate lay dead, as before; but on the isoniazid plate, bacilli continued to grow undaunted. "So we know rifampin kills more quickly than INH," concludes Sbarbaro.

O'Brien pronounces himself underwhelmed. "We have good data that says this regimen [is] equivalent [to the longer six-month course of INH] and that adherence is better," he says. "It makes sense to try it in HIV-negatives."

Sbarbaro chuckles, and allows himself a final don't-say-I-didn't-warn-you: "Okay, guys. If you're gonna use this, implement it patiently. Really document what's happening. And go cautiously." ■

Researchers identify best predictors of transmission

A quantitative method to rate exposures

Alabama researchers are refining a tool they hope will streamline contact investigations by taking some of the guesswork out of deciding which exposures should take top priority.

"With contact investigations, people typically use terms like 'close contact' and 'casual contact,' but the trouble is that no one knows exactly what those terms mean," says **Michael Kimerling**, MD, MPH, assistant professor in the schools of medicine and public health at the University of Alabama in Birmingham. "We're trying to take some of the guesswork out of it by quantifying exactly what constitutes a significant contact."

To do that, Kimerling and colleagues have analyzed more than 60 variables to see which are the best predictors that someone exposed to active TB will become infected. So far, six factors appear to be strongly predictive of skin-test positivity, he says. They are place (when "place" is the home); frequency of exposures; total hours of exposure; presence of cavitation on a chest radiograph; positive sputum culture; and the two highest categories of smear positivity (i.e., the presence of "moderate" or "numerous" numbers of bacilli).

Some factors, such as age, seem to be inversely correlated with skin-test positivity, Kimerling says. Children ages 0 to 5, for example, are less likely to be infected (though once infected, of course, are still more likely than adults to progress to active disease).

The exception is children ages 4 to 15, the period known as the "Golden Age of Childhood." Children that age appear to be just as likely to test positive as adults in the same circumstances but less likely to progress to active disease.

Other factors that haven't proven to be strong predictors for infection include certain environmental variables, including room size and type of ventilation. Traits of the index case that haven't shown predictive value include the patient's race and ethnicity. (These factors were significant in a univariate analysis but not in a logistic regression analysis, Kimerling notes.)

Perhaps only due to small numbers, other factors don't look as if they are predictive but may become so as more data come in. They include HIV status; a history of certain other diseases, including diabetes and renal failure; homelessness; and the presence of intravenous drug abuse.

At least one variable wasn't put into the hopper at all, Kimerling notes. Although clinicians typically assume an index case who complains of a cough is more infectious than someone who does not complain of that symptom, researchers decided that the question of how much someone has been coughing probably resists being quantified objectively.

Help in assigning top priorities

In the course of the project so far, data have been analyzed from 291 cases and 2,856 exposures, says Kimerling. He plans to continue collecting more information until this spring, when he will perform a final analysis and compare it with the preliminary analysis. Once that's complete, each variable will be assigned a weight on a scoring system.

Within the scoring system, certain variables — such as the presence of cavitation on chest X-ray — override others in importance. Contacts whose circumstances add up to a certain score will be categorized as "significant" and will be accorded a commensurate amount of time and attention, he says.

The findings and the scoring system, in turn, eventually will be incorporated into a piece of software that will be loaded onto the laptop programs that outreach workers in the state already use during contact investigations.

Findings will help clinicians assign priorities more easily and will aid field workers in knowing where to direct their attention, researchers hope. "It will help us know whether to go full-speed on an investigation or whether it can wait," Kimerling says. "It will also help focus the efforts of field workers by showing them what questions are most important to ask — and to keep asking." In the field setting, the tool also will help field workers decide how far to extend their investigation. Is it enough, for example, to investigate contacts in the home environment? Should they extend to the work setting? Investigate just one shift, or all three shifts at work?

The program also will lend a certain authority to health department officials seeking to reassure those who have been exposed to a case, he adds. "For example, we'll be able to say with more certainty that in the absence of cavitation, or with the presence of only minimal bacilli on a smear, that a contact's chances of being infected are very small."

The software, along with a manual for users, should be ready by year's end. The state plans to share it at no cost with other programs. ■

Standing at a crossroad, Toronto seeks budget hike

Foreign-born patients, homeless problems pile up

The city of Toronto is poised at a crossroad when it comes to TB control. In the midst of political changes designed to save money, public health officials are holding their breath to see whether a big budget increase they've requested will be approved. The purpose of the increase, TB experts say, is to facilitate the implementation of more directly observed therapy (DOT) in a more consistent fashion across the six outlying towns recently incorporated into the city.

Nor are plans to expand DOT the only reason TB controllers need the extra money, says **Sharon Polluck**, RN, manager of the Toronto Communicable Disease Program. Among the city's homeless and underhoused, molecular testing has shown clustering of cases, indicating ongoing transmission of disease, and skin-testing shows that 38% of the homeless population is latently infected with TB.

Instead of recent transmission, that figure represents the epidemiology of TB peculiar to this city, where 90% of TB cases occur among the foreign-born, who are well-represented among the homeless and underhoused, Polluck says.

The city's melting pot of ethnic and racial groups includes a large Somali community where TB is regarded as a death sentence and a source of shame. Changing such attitudes is more challenging than usual, adds Polluck, since most Somalis remain illiterate in a language which existed only in oral form until 15 years ago when it was finally written down. (Because written material has limited applicability, TB controllers may make use of a training video that includes scenes of a Somali outreach worker speaking in her own tongue about treatment for the disease, she says.)

An overnight boom in the population

Then there is a third burden. TB controllers in Ontario, the province in which Toronto is located, every year must cope with about 6,000 notifications of what is known as "post-landing surveillance"— the follow-up mandated by terms of national immigration law for all foreign-born persons who arrive with evidence of skin-test positivity, changes in chest radiographs, or a history of prior treatment for TB.

"It's a huge burden for our public health department," says Polluck. Here, as in the United States, a large percentage of latently infected immigrants and refugees who break down with active disease do so within five years of immigrating, she adds. So far, estimates are that only about 10% of candidates for prophylaxis are actually offered isoniazid. "So we obviously have a lot of work to do, but again, we lack the staff," she says.

When the city of Toronto decided to incorporate the surrounding district towns two years ago, one result was an instant population boom: From 600,000, the city's numbers surged to 2.5 million people. No small part of the amalgamation process has been the challenge of trying to integrate six disparate TB control programs, all with varying degrees of resources at their command. One newly incorporated city, for example, had 112 cases of TB last year, but it only has three

staff members available to the TB program. In pre-amalgamation days, Toronto boasted a relatively well-heeled TB program, one of the first in the region to embark on a program of DOT.

Still, there's no fat to be trimmed from its budget. Because a principle motivation for the amalgamation was cost-savings, Polluck and others hope political leaders can be convinced they should make an exception when it comes to public health.

Recently, she took National Democratic Party leader Howard Hampton on a street tour to view some of the hostels and shelters where the city's underhoused find refuge. Hampton concluded that "a raging TB epidemic" was looming, according to reports in the city's newspaper.

Though perhaps not quite that bad, TB among the homeless "is certainly an area where we're vulnerable," she says. Throughout Ontario, there are estimated to be between 25,000 and 50,000 homeless people, with cutbacks in social services probably boosting the numbers, experts here say. Every night, some 4,000 people seek refuge in one of Toronto's 24 shelters, she adds. Churches in the city also take turns offering beds, especially when temperatures plummet to 50° C below and worse.

Along with many foreign-born residents, shelters and hostels house many members of the country's aboriginal population; among them, co-infection is high, with HIV rates at about 12%.

'Hey! That's one of ours!'

When the city's TB control division first decided to carry out DNA studies of isolates from the homeless population, initial results indicated no clustering, Polluck notes. Determined to make certain they hadn't missed something, laboratory investigators went back and combed through cases recorded over the past year and a half, expanding the circle beyond the homeless to include underhoused residents as well. That's where evidence of clustering, indicating recent transmission, turned up, she says.

When Toronto TB controllers presented the data at a recent conference in the United States, a New York City TB control worker recognized one of the banded patterns and cried, "Hey! That's one of ours." Sure enough, when investigators went back and checked records, the Toronto patient was found to have spent time recently in the Big Apple.

That's not the only time New York City has figured in the local conversation, Polluck adds. "We point to what happened when you cut back your public health infrastructure there and hold that up as an example," Polluck says. "We want people to realize it's important not to make the same mistake here." ■

Target TB screening, report tells universities

Broad-based screening won't get job done

Many colleges and universities screen at least some students for TB, but often in the wrong way or for the wrong reasons, the first comprehensive survey of such practices has found. When it comes to TB skin-testing, many institutions are simply spinning their wheels without going anywhere in particular, the report suggests.[1]

"That was a surprise to us — how many schools are doing broad-based screening and how often the screening is just an item on a list to check off, without much follow-up," says **Karen Hennessey,** PhD, MSPH, Epidemic Intelligence Service officer in the National Immunization Program at the Centers for Disease Control and Prevention.

That probably helps explain why so few TB cases reported to have occurred at colleges and universities were uncovered through screening programs. Overall, 4.7 TB cases were identified for every 100,000 students screened. Of 114 cases reported during a four-year period, only 32 were identified as a result of a required skin-test screening. Most of the rest were found when students became symptomatic or through contact investigations; in a handful of cases, the means of discovery was not recorded.

The survey, which was conducted on behalf of the American Public Health Association, gathered responses from 624 schools nationwide. Of that total, 61% of the schools replied that they required a skin test from at least some students; 26% said they required the test of all new students; 8% required it only from new international students; and 47% asked for skin-testing only among students enrolled in certain academic programs (including health care, teaching, and social work).

Of the 348,368 students screened at all the schools, an average of 3.1% had positive skin

tests (with a median rate of 0.8% positivity). The schools that screened only international students had a much better yield, at 22.9%.

One clear lesson from those findings is that targeted screening is much better than broad-based screening, says Hennessey. Not only is targeted screening cheaper, it's safer because it avoids turning up the false-positives (who'd perhaps be offered unneeded prophylaxis) that result when a low-prevalence population is screened, she says.

The problem is that some schools say targeted screening is hard to implement, she adds. "Schools feel it's difficult to target only international students," she says. "They feel it might be [perceived as] discriminatory."

Along with problems about whom to screen, the survey turned up a second set of shortcomings in the ways screening is carried out.

For example, some schools accepted multipuncture and Tine tests; many recorded results not in millimeters of induration but instead as simply "positive" or "negative"; some schools didn't bother to collect the data in a central bank; and others excused students from screening because of a history of a BCG vaccination.

Screening unnecessary at some schools

Screening shouldn't be an all-or-nothing proposition, Hennessey says, even though that approach often seems the easiest way to go. In fact, not all schools should be doing TB screening, she adds. "First, you should look at your school population and see whether you need to be screening," she says. "See if you have a population at risk. Then decide what kind of screening program you should have and set goals for it. Collect the data and look at it periodically to see if those goals are being met."

A good screening problem includes efforts aimed at educating students about the benefits of prophylaxis, and the ability to provide isoniazid preventive therapy. "You must have all that in place, and then do follow-up and see what proportion of students actually do take the INH," she adds.

If a school decides to do screening, it's important to target only students from high-risk groups — that is, students from parts of the world with high rates of TB; immunocompromised students and students working in health care settings, says Hennessey.

In addition, only the Mantoux skin test should be accepted, and students vaccinated with BCG should not be exempted. Finally, results of screenings should be collected and periodically analyzed in a data bank, says Hennessey.

Reference

1. KA Hennessey, JS Schulte, L Cook, et al. Tuberculin skin test screening practices among U.S. colleges and universities. *JAMA* 1998; 280:2,008-2,012. ■

A postcard from India: 'Don't ditch DOT, fix it'

WHO-endorsed regimen takes a beating

Tom Frieden, MD, the former czar of TB control in New York City and now a regional head for the World Health Organization based in New Delhi, has a message for the folks back home: When it comes to directly observed therapy (DOT): Don't throw out the baby with the bath water.

"It is possible to do DOT badly, and that's not a trivial finding," Frieden says. "There is the risk that DOT can degenerate into something mechanical and authoritarian. In that case, it's no better — and, in certain subsets of patients, may even be worse — than self-administered therapy. But the correct response isn't to say that since we can't do it well, we shouldn't do it at all."

Frieden is referring specifically to the dust-up that's been taking place recently in the pages of *The Lancet*, a British peer-reviewed journal in which a randomized, controlled trial carried out in South Africa pitted the WHO program (which incorporates DOT as one of five principal elements) against self-administered therapy and found the self-administered group did better.

Stateside, DOT also has taken a series of knocks of late. In *Chest*, a retrospective look at DOT vs. self-administered therapy (also structured as a randomized, controlled trial) found that even though DOT bested the opposition, both methods made a relatively poor showing when measured according to how many patients had completed therapy by the end of 12 months.

Meanwhile, researchers at Johns Hopkins University in Baltimore, a city that has incorporated DOT into its TB control program for the past 15 years, say they also have found that DOT

has failed to eliminate ongoing transmission among the homeless population.

"That's an interesting result, and a little disturbing," Frieden says. He offers a tantalizing prediction: "You'll soon see some data that says something very different coming out of New York City."

With or without DOT, programs that aren't getting good results need to figure out where they're going wrong, Frieden says. "The success or failure of a program is evidence-based," he says. "If a program is getting 85% successful treatment, by whatever means, then more power to them — they should keep doing whatever they're doing. If not, they should look at what's happening and improve things."

Though he concedes it's possible to get good results without DOT, it's not likely, he adds. "I look at it this way: If you do nothing at all, about 20% of patients get better on their own." Then, according to one recently published meta-analysis, by adding a regular supply of drugs, "you can get about 60% completion. With DOT, you get to about 85% completion." Adding incentives boosts completion to 90% to 95%, he adds. "So how can you possibly justify condemning patients to a method that's got a 25% less chance of achieving a cure?"

Watch your attitude

As for programs that aren't getting optimal results with DOT, Frieden offers some simple advice. First, check to see whether programs are operating at inconvenient times or places. Second, make sure your own attitude is correct. If patients experience DOT as authoritarian, which authors of the South African study said they do, it's the fault of the program leadership, he says. "If you think DOT is an imposition, you can be sure your patients will experience it that way, too," he says. "Blaming staff or patients is no good either; that's where leadership comes in."

In India, Frieden has found himself up against a variety of hurdles: physicians' skepticism, bureaucratic inertia and fatalism, inadequate drug supply, and wide variations in non-approved regimens. Even so, over the next year, he hopes to enroll 100,000 in the WHO program, which incorporates DOT as one of its ingredients.

Plus, he's managing to overcome widespread skepticism that once threatened to derail his operation, he adds. "The biggest question I get nowadays at medical conferences is why aren't we covering the whole country with [the WHO-approved regimen, Directly Observed Therapy, Short-Course]?"

(Editor's note: Next month in TB Monitor International, *look for a report of a spirited conversation between Frieden and a TB control expert in South Africa who says DOT isn't working there.)* ■

Iffy showing in trials prompts rifalazil bailout

Company backs second drug instead

PathoGenesis Corp., a Seattle-based pharmaceutical firm, recently announced its decision to cancel plans for further trials of rifalazil (PA-1648), an agent that originally had seemed to show promise as a new anti-TB drug.

Rifalazil didn't perform as well as had been hoped in Phase II trials, which showed what the company terms "inconclusive indication of efficacy," a spokesman for PathoGenesis says. Moving ahead to a larger-scale trial might have cleared up the ambiguity, but the decision was made instead to back a more certain winner the company also has under development.

The surer bet may be Tobramycin, company executives decided. Because it is an aerosolized antibiotic that delivers medication more rapidly to the lungs than oral antibiotics, researchers hope Tobramycin eventually may be useful in shortening the duration of anti-TB therapy. The drug recently completed Phase II trials that examined its usefulness in the treatment of another lung condition, bronchiectasis; it is still undergoing Phase II trials designed to test its usefulness against TB.

Rifalazil, a new member in the family of rifamycins, had sparked the interest of researchers and outside observers because of its unusually long half-life, which suggests the agent could be administered as infrequently as once a week or even once every two weeks. Phase I trials raised questions about toxicity, however, prompting a scale-back in dosage in the successive trial phase.

PathoGenesis, a small newcomer firm based outside Seattle, specializes in the development of new agents for use against chronic diseases, and lung diseases in particular. ■

TB 'repairman' proves good predictor of relapse

Handy early marker opens window onto latency

Measuring amounts of a protein produced by the TB mycobacterium — apparently as a way to repair damage done to its cell wall by isoniazid — someday may be a handy way for clinicians to predict whether patients will respond " to therapy, says **Robert Wallis**, MD, associate professor of infectious diseases at Case Western Reserve University in Cleveland.[1]

The protein, antigen 85 complex, turns out to be significantly higher at a point two weeks into therapy among patients who continue to have positive cultures after other patients become culture-negative or ultimately fail therapy altogether.

Along with providing an early marker to help clinicians predict how their patients will respond to therapy, Wallis' findings also may open what he calls a "window" that lets scientists peek into the hidden workings of TB latency.

Latency a survival strategy

And why not? Latency, like the antigen 85 complex, represents a survival strategy of a sort, Wallis points out. "When people are first infected, only a minority develop rapidly disseminated disease and die," he says. What happens in most people — a period of latency, followed sometimes by some unknown signal that activates the bug — makes sense from the bug's point of view, since most TB transmission occurs from patients with chronic cavitary reactivation disease.

But how, exactly, does the TB bug achieve a state of latency? It's tough to say, latency being what it is.

Wallis reasoned it might be possible to look at what is afoot during a state of artificial latency. By that, he means the period of drug-induced latency among patients on anti-TB therapy who are adherent, respond well to treatment, aren't plagued by drug resistance, and yet go on to relapse.

What he found surprised him, he says. The protein is secreted by metabolically active bugs in log-phase growth, leading him to expect it would decrease rapidly during therapy.

"Instead, it turns out that isoniazid transiently *increases* the expression of this protein in cultures," he says. "But to really see that, the bacilli have to remain viable." That continuing viability probably points to which strains will be difficult to eradicate, he adds.

Results of treatment

In fact, subjects in Wallis' study who did relapse (along with those who simply persisted longer than others) showed rising levels of antigen 85 complex. Concentrations of the protein peaked, at levels ≥ 60 pg / ml, around day 14 of therapy, he found.

On the other hand, those with levels below 60 pg / ml by day 14 showed rapid response to treatment and ultimately were cured. (Of subjects with day 14 levels above 60 pg / ml, 33% showed persistence of TB beyond the ninetieth

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day of therapy, and 17% ultimately failed treatment.)

"I find it exciting to think there might be a point-of-care assay you could use after only two weeks or so of treatment to predict outcome," Wallis explains. "That way, you could see whether you'd need to make adjustments [to the regimen]."

Neither compliance nor drug-resistance in the conventional sense of the word was implicated in the relapses and persistence, Wallis emphasizes. Strictly speaking, of course, he says the antigen's presence represents a TB bug's attempt to "resist" the effects of isoniazid.

A combination of factors

In practice, Wallis says persistence and relapse probably can be explained by a combination of biological factors (such as elevated levels of antigen 85 among some hardier strains of bug) coupled with human factors (such as poor adherence).

That explanation might help account for why even patients who seem to adhere well still relapse sometimes and, conversely, why patients blessed with "a wimpier bug," even though they don't comply as well, may do just fine, he says.

Reference

1. RS Wallis, M Perkins, M Phillips, et al. Induction of the antigen 85 complex of *Mycobacterium tuberculosis* in sputum: a determinant of outcome in pulmonary TB treatment. *J Infect Dis* 1998; 178:1,115-1,121. ■

CE objectives

After reading each issue of *TB Monitor,* health care professionals will be able to do the following:

- Identify clinical, ethical, legal and social issues related to the care of TB patients.
- Summarize new information about TB prevention, control, and treatment.
- Explain developments in the regulatory arena and how they apply to TB control measures.
- Share acquired knowledge of new clinical and technological developments and advances with staff. ■