

TB MONITOR™

The Monthly Report on TB Prevention, Control, and Treatment

December 2001 • Vol. 8, No. 12 • Pages 137-148

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Low-incidence Montana manages outbreak well: A case study

CDC experts' help was welcome, state TB head says

An outbreak of TB on an Indian reservation in a low-incidence state spurred TB controllers to make several crucial changes in their program, thanks to collaboration and teamwork with experts from the Centers for Disease Control and Prevention.

A case cluster among a group of alcoholics who lived and socialized together on an Indian reservation posed some tough medical and management-related problems, says **Denise Ingman**, TB control coordinator for the Montana Department of Public Health and Human Services. "As a low-incidence state, we're finding that we're having fewer easy cases, and that with the easy cases we do have, we do just fine. But we're also finding that our remaining cases are very difficult."

As soon as the CDC got word of the outbreak, officials there offered to lend a hand, says Ingman. **Renee Ridzon**, MD, an epidemiologist with the Surveillance and Epidemiology Branch of the Division of TB Elimination, got especially high marks from Ingman: "Renee has so much energy and expertise," Ingman says. "By the time it was all over, we wanted her to just stay on and work with us."

Grappling with a sudden surge in cases

The CDC, for its part, was eager to try implementing some of the mandates conveyed in the recent Institute of Medicine report on fighting TB in low-incidence areas, says Ingman. Stuck at a plateau of about 20 cases per year for the past decade, Montana made for a good test of what happens when a low-incidence state must grapple with a sudden surge in cases, she adds.

The index case, a 42-year-old alcoholic male living on an Indian reservation, was diagnosed in May 2000,

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Federal authorities worried about cyber-attacks

In the wake of the Sept. 11 terrorist attacks, the Federal Bureau of Investigation's National Infrastructure Protection Center has issued an advisory notice that it 'expects to see an upswing' in cyberspace-related crime. The two most likely forms of criminal computer activity the FBI expects to increase include patriotic 'hacktivism,' or computer hacking by both domestic and foreign fringe groups, and new viruses introduced into computer networks 147

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Ingman says. Because he'd delayed seeking treatment, he was very infectious by the time of his diagnosis.

Then, just as the contact investigation was getting under way, an unexpected death occurred. The patient c who died was part of the same social network, a group of middle-aged men and women who lived in the same house and who all drank together. Apparently, she died not from TB (which wasn't even diagnosed until results came back from biopsy) but, more likely, from problems related to her alcoholism.

Ultimately, three more cases in the social group were diagnosed, bringing the total to five cases diagnosed within nine months. Molecular epidemiological tests confirmed the cases were linked.

Several of the Indian Health Services (IHS) physicians assigned to treat the cases had never seen a single case of TB in the three to four years they'd worked on the reservation, Ingman says — much less a cluster of five cases. Luckily, the tribe's health care system consists of an effective collaboration between public health nurses (hired with tribal funds on a contractual basis) and clinic nurses and physicians who work for the IHS.

State TB controllers and tribal health care providers made several alterations that helped the system cope better, Ingman says.

First, an elderly public health nurse with a keen understanding of social networks on the reservation was convinced to come back to work the outbreak. TB experts from the CDC "spent three days just picking her brain on contacts," says Ingman. "She'd look at the list of contacts and say something like, 'Well, I don't see Johnny's brother here. Why is that?'"

The health care team also began holding weekly case conferences, Ingman says. Meanwhile, Ridzon and other CDC experts provided ongoing education for staff, assisted in setting up better record-keeping services, and conducted chart reviews, Ingman says.

Getting compliance was tough

The fact that all the cases were alcoholics made obtaining compliance a continuous challenge, Ingman reports. Many patients would wander off to party for several days, in one instance to a neighboring town. Among contacts, the sheer numbers — 126 in all — made

delivery of preventive therapy difficult at best.

Public health nurses pulled out all the stops, including direct observation, enablers, and incentives, says Ingman. The participation of the formerly retired public-health nurse was a tremendous help, because she was known and trusted by everyone in the community.

TB controllers also decided to expand directly observed therapy to all contacts. For teens, that meant providing gift certificates to a nearby K-Mart; for adults, food coupons and other incentives were liberally applied. Even so, one contact who repeatedly disappeared was finally placed under house arrest and equipped with a wristband monitor — the first time such sanctions had ever been imposed, Ingman says.

In the end, all surviving cases completed treatment without incident, and 90% of contacts have also completed preventive therapy, Ingman says. “We’re still trying with the rest of them,” she adds.

In hindsight, Ingman says getting extra help from the CDC made a big difference. “We certainly welcomed the extra manpower and expertise,” she says. “We liked the idea of having an expert to conduct chart reviews. And we wanted input on whether our contact investigations had been thorough.”

The outbreak lent extra incentive to implementation of other important changes that TB controllers had already planned to pilot in several sites, says Ingman. They include:

- **Contract with a TB physician.** “We’ll start that with this particular reservation and maybe one more, and then expand,” says Ingman. Duties of contractual experts will be to provide help at baseline and then on a monthly basis (or as needed). “We know there are model centers and so on, but we want consistency — the same person every time,” Ingman notes. A supplemental grant the state program applied for and received will cover the costs.

- **Provide additional, ongoing TB training.** The state has already sent some staff for training to National Jewish Hospital in Denver, Ingman says. Other training will be conducted on-site.

- **Beef up communication with weekly case conferences.** “Our [IHS] physicians have huge workloads, sometimes with as many as 25 to 30 patients a day,” notes Ingman. “So it’s very important for them to stay on top of each case.”

- **Begin targeting more high-risk contacts, and expand the use of directly observed preventive therapy to all contacts.** Once the current outbreak

work is over, Ingman’s plan is to devise a pilot program that will provide treatment for latent TB infection to diabetics who are skin-test positive. Diabetics’ risk for TB is four times higher than that for regular TST positives, she adds.

- **Continue with careful, rigorous documentation of cases and contacts.**

- **Draw on community resources when possible.** Hiring the retired nurse certainly paid off, and Ingman says she’d readily turn to similar community resources again. ■

TBES study to tackle immunogenetic factors

Could be used to winnow candidates for LTBI

A study of what genetic factors make someone more likely to progress to active TB is one subject that soon will be tackled by the new TB Epidemiologic Studies Consortium (TBES). If researchers find genes linked to resistance or susceptibility, think how much easier a contact investigation could be, says **Mary Reichler, MD**, the principal investigator for the new study.

“We know only one in 10 people who are latently infected goes on to develop active disease,” says Reichler. “If we could devise a test for those determinants, you could theoretically pick out those people and know that they would probably be the only ones who’d need isoniazid prophylaxis.”

Genes linked to susceptibility or resistance could also play a starring role in a preventive treatment, Reichler adds. “The idea is that you’d only vaccinate people who are skin-test positive and who have this certain set of genes,” she explains.

It’s not as far-fetched as it might sound. Previous studies have identified seven genes where a variant has been tied to susceptibility to (or protection from) disease, Reichler says. One problem is that the studies have been conducted in specific non-U.S. populations, so results may not apply to Americans.

Reichler’s work will also look at genetic propensities to becoming latently infected with TB. Again, previous studies in the field are of limited usefulness, in this instance because they’ve

been conducted only in areas where TB is endemic, making it hard to know whether infections are recent or not.

In the big picture, immunologic and genetic factors play only one part in whether a person gets infected or develops TB, Reichler notes. Other factors include case infectiousness, environment, and factors related to the organism itself. "We don't yet know how big a part host factors play," Reichler points out. Plus, among host factors, no one knows yet how big a part is played by genetic factors.

Contracts for the study have been awarded to seven sites, with an eighth site under consideration, Reichler says. Funding for the contracts is already secure. ■

Cultural diversity 101: Avoid stereotyping

Here's a model to make you culturally competent

As soon as a TB worker or any health provider makes a statement about a particular culture, they're going to find that many more people from that culture don't fit into that particular stereotype, says **Josepha Campinha-Bacote**, PhD, RN, CS, CNS, CTN, FAAN. Campinha-Bacote, president of Transcultural C.A.R.E. Associates in Cincinnati, has developed a model framework to guide health care professionals in providing culturally and linguistically appropriate services.

"My whole model is to prevent stereotypes and reinforce the concept of intra-ethnic variation. There are more differences within cultural groups than across cultural groups," she says. The components of the model are cultural awareness, cultural knowledge, cultural skill, cultural encounters, and cultural desire. Here is an overview of each component:

- **Cultural awareness.**

You have to be aware of your own biases and prejudices toward a particular group and deal with them, Campinha-Bacote says. An awareness of your own cultural or professional values helps you avoid imposing your beliefs and values on members of another culture, she says. "For instance, take homeless people. The homeless are a transient population," she notes. "One day you work, and one day you don't. Every homeless

person is not the same." Health care providers shouldn't be quick to label a particular group as noncompliant, she points out. Instead, explore what kind of case management services may be required to meet the needs of that particular group.

- **Cultural knowledge.**

"People have stereotypes, but they need to get cultural knowledge about other people," Campinha-Bacote says. She recommends that providers consult web sites and books to learn more about other cultures, especially their values, beliefs, and lifeways. Biocultural ecology is one area where providers need knowledge so they can know what diseases are common to a particular group and what drugs may be contraindicated, Campinha-Bacote points out. For example, certain Asian groups have a high incidence of tuberculosis, and African-Americans are more susceptible to cardiovascular disease and diabetes than other groups. Don't just become aware of your patients' values, beliefs, lifeways, and practices, but also learn about their physiological, anatomical, and pharmaceutical differences, she says.

- **Cultural skill.**

This may be a key issue for public-health providers, Campinha-Bacote says. "Maybe you can't get to a web site, you don't have a book with you, and you are standing in front of someone. Cultural skills are your ability to do a cultural assessment, to know what questions you can ask to elicit their cultural beliefs," she says. Ask your patients open-ended questions that are culturally relevant. She cites examples that include:

- What do you think caused your illness?
- What kind of treatment do you think you should receive?
- What do you fear most about your illness?
- What are the chief problems your sickness has caused?
- What do you think is the way to cure it?¹

More than 30 different cultural assessment tools are available, Campinha-Bacote says. Review all the tools available and develop questions that fit your specific caseload.

- **Cultural encounters.**

"There are certain things that only face-to-face interaction will validate. Make sure you expose yourself to a few encounters to validate the knowledge you've learned from books and web sites and lectures," says Campinha-Bacote. For instance, in her own Cape Verdian culture, if you

Cultural Competency on the Internet

Here are some Internet resources on cultural competency:

- Office of Minority Health, U.S. Department of Health and Human Services: www.omhrc.gov
- Diversity RX: www.diversityrx.org
- National Mental Health Association cultural competency position paper: www.nmha.org
- National Center for Cultural Competence: www.dml.georgetown.edu/depts/pediatrics/gucdc/cultureal.html
- Agency for Health Care Research and Quality Minority Health Research: www.ahcpr.gov/research/minorix.htm
- Transcultural Nursing Society: www.tcns.org
- Cross Cultural Health Care Program: www.xculture.org

offer someone water, they say, “no thank you” the first time to be courteous. “In some cultures, ‘yes’ doesn’t mean ‘yes’ and ‘no’ doesn’t mean ‘no,’” she says. If you have encounter after encounter, you will realize these things, she adds. However, keep in mind that interacting with a few people from a specific ethnic group does not make you an expert on the group.

• Cultural desire.

You can have the right words for someone of another culture, but if your heart isn’t there, whatever you try won’t work, Campinha-Bacote says. “If you can’t get to the part that shows you care, then you don’t really care, no matter how much knowledge you have. People respond to caring,” she says. Remember that learning cultural competence is an ongoing process. “The process of cultural competence is a process of becoming, not being. When you ever think you get it all, you don’t.”

(Editor’s note: For more information, see: Campinha-Bacote J. The Process of Cultural Competence in the Delivery of Healthcare Services. 3rd ed. Cincinnati: Transcultural C.A.R.E. Associates Publishers; 1998. Contact: Dr. Campinha-Bacote, President, Transcultural C.A.R.E. Associates, 11108 Huntwicke Place, Cincinnati, OH 45241.)

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1. Kleinman A, Eisenburg L, Good B. Cultural illness and care. *Annual of Health* 1978; 251:136-147. ■

Community-based efforts chalk up successes

Sites in NC and Maryland have tale to tell

There is a good reason why officials with the Centers for Disease Control and Prevention in Atlanta mention HIV prevention work done in North Carolina and Maryland when asked for success stories.

Joint state-federal programs based in North Carolina and Baltimore have reached at-risk populations that traditionally are difficult to find, and they’ve demonstrated positive outcomes.

The nontraditional counseling program in North Carolina has a greater proportion of high-risk clients undergoing HIV testing than the local health departments have, says **Marti Eisenberg Nicolaysen**, nontraditional counseling, testing, and referral sites (NTS) coordinator and public health advisor assigned to the North Carolina STD Prevention and Care branch of the CDC in Raleigh.

Targeting high-risk populations

Through the NTS program, 21% of the clients tested in 2000 were people who had the risk factors of being men who have sex with men (MSM) and/or injection drug users (IDUs). Another 15% tested were people who exchange sex for money and/or people who have sex while using drugs, Nicolaysen says. By comparison, local health departments and other publicly funded sites had only 5% of their HIV-tested clients in the MSM and IDU categories and only 7% in the sex worker or drugs-during-sex categories.

“So we’re reaching people who are at higher risk,” Nicolaysen says. “We’re only testing 5,000 people, and the public health department tests 100,000, but we’re targeting the high-risk population and neighborhoods where high-risk activity takes place.”

As a result, the North Carolina NTS program has a high HIV-positive rate, which in 2000 was 1.1% among those tested. The local health department’s positive rate among the 100,474 people tested for HIV was 0.7%. Of 4,617 people tested through the program in 2000, there were 52 people testing positive for the virus. Of 3,732 tested for syphilis, there were 72 testing positive or 1.9%, Nicolaysen says.

An HIV prevention and testing program in Baltimore also targets neighborhoods where at-risk individuals might be found, says **Carol Christmyer**, RN, MS, assistant director for HIV services for the Maryland State AIDS Administration in Baltimore.

“In Baltimore, a mobile van goes to predetermined neighborhoods where there are a lot of urban problems — poverty, lead paint poisoning, sexually transmitted diseases [STDs] — and where people are very poor and are dealing in drugs,” Christmyer says.

“The van provides health screening, HIV testing, and treatment,” she adds. “And if we find people who are positive, we link them with a clinical setting where they can get care and intensive case management.” (See story on Maryland’s van prevention program, p. 144.)

Providing more than HIV tests

One key to the success of community prevention programs is that they provide HIV screening and testing as part of a package of health care products, which makes it more attractive to potential clients.

For example, while the cornerstone of a program in Greensboro, NC, is HIV prevention and counseling, the same program also tests clients for syphilis and screens for blood glucose, lead poisoning, sickle cell anemia, and other health concerns, depending on what services a particular community needs, says **Caroline Moseley**, MEd, CHES, health education manager at the Guilford County Department of Public Health in Greensboro. (See story about North Carolina’s HIV outreach programs, at right.)

The program is located at five sites throughout the county, including homeless shelters, drug treatment centers, jails, and community-based organizations.

An advantage to combining HIV services with general health screening is that it takes the stigma out of visiting the program and is more likely to attract the targeted population, Moseley says.

Also, the North Carolina NTS projects provide bilingual outreach staff in Hispanic communities, and they each make referrals for STD and tuberculosis testing and treatment, substance abuse counseling, family planning, domestic violence, and case management for HIV-positive and early intervention clients.

Before long, the outreach program will provide

more HIV tests than the health department does in some areas, and this is another reason why the program should be used to screen for other STDs, as well, Moseley says.

“Early on, we realized that HIV probably was not the only service people needed in the community and that we should test for other STDs,” Moseley says. “So we’ve offered syphilis testing pretty much since we started the HIV program in the mid-1990s, even when it was not funded.” ■

NC testing projects get to the heart of the problem

Nurses, health vans go to those most at risk

They’re labor-intensive and costly, but prevention projects in North Carolina show that clinicians and public health officials can reach people most at risk for HIV if they go directly to their street corners, colleges, gay nightclubs, homes, neighborhoods, and shelters.

These programs work well partly because they offer additional health services at-risk people, including blood pressure screenings, screening for other sexually transmitted diseases (STDs), and referrals for housing and health care.

Nurse performs tests at homeless shelter

Here are how the North Carolina prevention and testing programs work:

- **Bring HIV prevention services to those most at risk.**

In Asheville, NC, a nurse practitioner visits a local homeless shelter to provide HIV testing and counseling, as well as STD prevention and referrals for other health problems, says **Marti Eisenberg Nicolaysen**, a nontraditional counseling, testing, and referral sites coordinator and public health advisor with the Atlanta-based Centers for Disease Control and Prevention. Nicolaysen is assigned to the state of North Carolina STD Prevention and Care Branch in Raleigh.

“There is a comprehensive program that reaches homeless adults who have risk behaviors,” Nicolaysen adds.

CDC statistics show that the greater Asheville area has had an exploding HIV epidemic. For example, there was an increase of 60% in the AIDS case rate in Asheville and surrounding areas between 1991 and 1997. This is compared to an AIDS case rate increase of 43% in large metropolitan areas during the same time period.

Also, the HIV infection rate nationwide is three times higher in the homeless population, and 69% of homeless adults are engaged in HIV risk behaviors.

The Greensboro area brings prevention services to a housing authority community center, churches, homeless shelters, jails, drug treatment facilities, and even to street corners, says **Caroline Moseley**, MEd, CHES, health education manager at the Guilford County Department of Public Health in Greensboro.

"We go into the communities on a regular basis, pass out condoms and information, make referrals to whatever people need, and also provide HIV and syphilis testing," Moseley explains. "It's labor-intensive, but we really are reaching the people we need to reach."

While the health department's clinic is easy to access in a location near downtown, the majority of people who come into the clinic are what Moseley calls the "well worried."

"These are people who don't know a whole lot about HIV and aren't engaging in very high-risk behaviors," Moseley says. "Those at high risk are not accessing traditional health care services at all, unless they end up sick in the hospital."

In Rocky Mount in eastern North Carolina, one prevention project uses a mobile area health clinic van to reach minority women of child-bearing age and their partners. The van has also visited neighborhoods, trailer parks, and emergency evacuation areas where there has been flooding.

A nurse visits target communities and offers counseling, women's health screenings, blood pressure screening, risk assessment, and HIV and syphilis testing and referrals. Sometimes the van has provided screening for tuberculosis infection, glucose monitoring, pregnancy tests, and even minor dental work, Nicolaysen says.

The additional health services were the result of the program's collaboration with an agency called Down East Partnership for Children, which provides children with dental screening and immunizations.

"They also do outreach and distribute flyers to make sure people know when the van is coming

to their area," Nicolaysen says. "It's been very successful."

- **Provide follow-up with results and counseling.**

Outreach workers will return to the same sites where they provided testing and counseling to give follow-up information and treatment to those who need it, Moseley says.

"We'll bring back results to people on the street, and if treatment is needed, we'll transport them to a hospital," Moseley says.

It's difficult sometimes to find the people who were tested in these community locations, but it can be done, she says. For example, in one quarter this year, the program tested 441 people, finding three who were positive for HIV, and outreach workers provided follow-up post-test counseling to 163 people, Moseley says.

"The CDC is pushing to have more people get their results, even if they are negative, but that's hard to do with this population because they're very transient," Moseley adds. "They may be tested and then end up in someone else's county, and we don't see them for six months."

The post-test counseling session focuses on reminding clients of a risk reduction plan and will discuss whether they will need a follow-up HIV test, depending on when they last might have been exposed to the virus. These sessions may last 20 minutes at a community setting or about 10 minutes when conducted on a street corner.

Getting clients to think quickly about risks

"Our counselors are skilled at asking questions and getting clients to think very quickly about their risks," Moseley says. "I'm a firm believer that the kind of prevention that works is one-on-one intensive counseling."

- **Use a multidisciplinary team.**

A typical street corner outreach session in Greensboro may take an entire afternoon. It will be conducted by a team consisting of health department employees and professionals from community-based organizations (CBOs). The team often will have a health educator, a phlebotomist, a social worker, a peer counselor from an AIDS service organization, an addict in recovery from a local drug treatment center, nurses, and others, Moseley says.

"It's important that our outreach team is well-versed in community services, even though our primary agenda is to prevent HIV and help people

find out their status," Moseley explains. "But a lot of times HIV is not the clients' agenda, and they may need housing or food first."

So the multidisciplinary team's first concern is to provide clients with the services and help they need. "We've had clients who knew we were there to test them for HIV, but they most needed shelter," Moseley says. "So we hooked them up with a shelter, which also is one of our testing sites, and then two months later when they came back to that shelter, they were ready to be tested."

- **Obtain joint funding and support.**

North Carolina started the outreach prevention programs and has obtained support and/or funding from the CDC, the Guilford Community AIDS Partnership, People Stopping Syphilis Today, the North Carolina Syphilis Elimination Project, and other organizations.

"We started out funding HIV prevention service delivery because we were in an emergency mode and someone had to do something," Moseley says.

Since 1997, the CDC has been involved. Currently there are nine projects (costing \$475,000) that use state and CDC money, including projects formed by six community-based organizations and three local health departments, Nicolaysen says.

Projects given leeway for spending

"We fund them to have these community sites offer HIV and STD prevention and testing, STD expanded services, and how they do it is up to them," Nicolaysen says.

- **Promote special events.**

The Guilford County Department of Public Health in North Carolina has a strong relationship with CBOs, which help to sponsor special events where HIV education and testing may be provided.

For example, the health department and CBOs have provided HIV/syphilis testing events, sickle cell anemia screenings, and HIV testing at gay/lesbian bars. They've also held HIV educational events at area colleges and have provided neighborhoods with special health screenings, including blood pressure checks. They may even bring health and HIV services to local motels where migrant populations might be found.

"People may not come in just for HIV testing, so that's why we attach lots of services," Nicolaysen says. "The collaboration with community agencies is very important." ■

Maryland program focuses on HIV 'positives'

Project targets poor neighborhoods, jails

An AIDS prevention project in Baltimore sends a van to neighborhoods known to have the urban hazards of poverty, lead poisoning, high rates of sexually transmitted diseases (STDs), and drug dealing.

The project also involves having health department staff visit local detention centers to offer counseling, testing, HIV services, and case management, says **Claudia Bowlin**, RN, MS, chief of the Center for Education and Training at the Maryland State AIDS Administration in Baltimore.

"The van has outreach workers who go to a site, park the van, and then go into the community within a several-block radius to meet people on the street and invite them to the van for a variety of services, including HIV counseling and testing," Bowlin explains.

Clients can also seek blood pressure testing, pregnancy tests, and other simple medical screenings if they desire. If the van staff can't help them with their medical problem, the staff will refer them to a clinic or emergency department. Outreach workers hand out brochures and condoms.

"The gift of a good outreach worker is that they can talk to people and meet them on their level, appearing to be peers to the individuals they encounter," Bowlin adds. "They know the street language and can convince people that it's in their best interest to go to the van."

The program appears to be successful in reaching its targeted at-risk population, as about 5% of the people tested in the van have been HIV-positive, Bowlin says.

Funded by the Centers for Disease Control and Prevention, the project is called Prevention for HIV-Positive Persons. Its goal is to find the estimated one-third of HIV-positive people who do not know their infection status, says **Carol Christmyer**, RN, MS, assistant director for HIV services with the Maryland State AIDS Administration.

Once clients are tested on the van, they are told to return in two weeks to the same site to receive their HIV results.

"When a test comes back positive, a worker is assigned to look for that person to explain the results and to offer medical services," Bowlin says.

The van has outreach staff teach clients how to negotiate safe sex and how to talk about sexual behavior. They give information on how an addict can enter drug treatment or, if that's not an option, use the city's needle-exchange program to ensure safer use of injection drugs.

"If people are HIV-positive, they are given condoms and told where they can get free condoms," Bowlin says. "We give them a whole range of prevention messages, and it depends on what their behaviors are that put them in jeopardy."

Case managers try to see clients more than one time to reinforce prevention messages, but this has proven difficult, Bowlin notes.

Outreach workers also provide HIV testing and counseling services to people housed in local detention centers. Even here, the two-week waiting period for test results can prove to be a problem because inmates often are released by the time outreach workers return with their test results.

The Maryland HIV prevention project divides the state into five regions and has programs developed according to the specific needs of a particular region.

"In all five regions, youths are a very high priority," Christmyer says. "So a fair amount of programming is developed to target youths and teen-agers."

These programs may take place in a college setting or a drop-in community center.

Another targeted program is aimed at women of childbearing age who may be pregnant or thinking about getting pregnant.

"The media message developed for that encourages these young women to be tested," Christmyer says. "Then another segment is focused on the young men, showing them playing basketball and encouraging them to be tested."

Prevention campaign materials include television ads, radio spots that encourage people to call a hotline number for more information about HIV testing, bus posters, and free gifts, such as pens and cube sticky notes with the program's logo, Christmyer says.

"We'll run the advertising campaign for a period of a month or six weeks, and we'll run the perinatal portion over Mother's Day, for example," Christmyer says. "Then we'll take it off the air and start up again later."

Typically the initial impact is enormous: Calls to the hotline might increase by 1,500% in the months following a campaign, Christmyer says. "It dies down, and then to have another big impact, we'll give it another boost." ■

Voice of reason critical in the bioterrorism battle

The threat is real, but we are far from defenseless

A new era of bioterrorism has begun with the intentional anthrax scares that have left several people dead and many more exposed as this issue went to press.

But amid the shrill coverage of the widening anthrax investigations, the scramble for gas masks and the expected hoarding of Cipro, there must be a voice of calm and reason. That voice must be your own.

Infection control professionals, hospital epidemiologists, and other key clinicians involved in health care bioterrorism readiness and response must set the tone for a panicky public and an uneasy health care work force, emphasizes veteran epidemiologist **William Schaffner, MD**, chairman of preventive medicine at Vanderbilt University School of Medicine in Nashville.

"We have to re-instill a sense of confidence for people who work in the health care system," he says. "Start with the doctors. They are the ones who are going to be more panicked than the nurses."

Restoring calm to health care community

The current situation is reminiscent of the early stages of the HIV epidemic, when there was much anxiety about the communicability of the disease and whether even casual contact would spell a death sentence for health care workers.

In that chilling time of alarmist reactions and burning mattresses, Schaffner recalls that ICPs, epidemiologists, and other clinicians, stepped into the fray to provide calming confidence and accurate risk data.

"I'm beginning to think that we may be in a similar position now," he says. "We could have a very powerful educational and reassuring effect. Everybody's anxious about this, but I think we can diminish the level of anxiety," Schaffner adds.

Health care workers must be educated about bioterrorism agents and provided reassurance that the patient isolation precautions developed by the Centers for Disease Control and Prevention are extremely effective, urges Schaffner.¹

"The barrier precautions are going to work for bioterrorism. Once you get to chemical [weapons]

then you get into the whole 'moon suit' issue. But for bioterrorism, we don't need that," he says.

For example, systems of barrier precautions such as gloves, gowns, and masks to isolate patients infected with all manner of infectious diseases are already in place in virtually all U.S. hospitals.

"They work," he says. "Look, we all know pulmonary tuberculosis is communicable. I'm an infectious disease doctor, have been for 30 years. I've seen a lot of patients with tuberculosis, but I have also been meticulous about my use of [face masks and respirators]. My tuberculin test continues to be negative."

And anthrax, of course, is not communicable from person to person, reminds Schaffner, who investigated a case of occupational anthrax in an animal-hide worker when he was an epidemiologist for the CDC in the late 1960s.

"The bacteria do not cause a conventional pneumonia," he says. "They replicate locally and then release toxins. Because the bacteria never replicate to very high numbers, the person is not communicable. It is not so much an infection as it is an intoxication."

Inordinate fear of anthrax could cause another problem — hoarding and misuse of ciprofloxacin and other antibiotics. That tactic eventually could contribute to emerging resistance in pathogens such as *Streptococcus pneumoniae*, Schaffner notes.

"It is one thing for a hospital and the health department to develop an inventory in the event of an emergency," he says. "I do not recommend that individuals do that. I'm quite concerned that with antibiotics in their medicine cabinets there will be a temptation to just use it now and again for inadequate reasons in inadequate doses. If there was a recipe for antibiotic resistance, that's it."

More terror than toll

While the anthrax mailing campaign now under way sends out another shock wave with every news report, the tactic will likely result in more terror than actual toll. The rapid administration of antibiotics has offset illness following exposures, the disease is not communicable from those actually infected, and everyone is now on high alert for suspicious mailings. Indeed, if the wave of anthrax mailings continues, postal-treatment technologies may become a growth industry.

Regardless, anthrax is problematic as a bio-weapon because only a certain micron size of the inhaled spore will lodge in the upper lungs where it can release its toxins, says **Allan J. Morrison Jr.**, MD, MSc, FACP, a bioterrorism expert and health care epidemiologist for the Inova Health System in Washington, DC.

"If it is too large, it won't go in," says Morrison, a former member of the U.S. Army Special Forces. "If it's too small, it goes in and moves about freely without ever lodging. This is not as easy as getting a culture, growing it in your home, and the next day having infectious microbes."

"The sizing, preparation, and ability to deliver such a weapon are extremely difficult," he adds.

The Aum Shinrikyo cult in Tokyo attempted at least eight releases of anthrax or botulism during 1990 to 1995 without getting any casualties, he recalls. Variables such as humidity can come into play, clumping up spores even if they are perfectly sized for inhalation. Anthrax spores bound for human targets are also at the whims of ultraviolet light, rain, and wind dispersal patterns, Morrison says.

Earth: 'A very hostile climate for microbes'

"It is a very hostile climate for microbes on planet Earth," Morrison says. "The intent may be widespread, but the ability to deliver weapons-grade agents is going to be restricted to a very small subgroup. And even among them, they still will require optimal climatic conditions to carry it out. There will be causalities, as in war, but the distinction here is that there has not been widespread infection."

While anthrax is the current weapon of choice, the direst scenarios usually turn to the most feared weapon in the potential arsenal of bioterrorism: smallpox.

"Invariably, I have seen smallpox described as 'highly infectious,'" Schaffner says. "It's not. That is erroneous." For example, during the global eradication efforts in the 1960s, African natives infected with smallpox were often found living with extended families in huts, he adds. "It would usually take two to three incubation periods for smallpox to move through an extended family."

"It doesn't happen all at once. This was a critical concept in the strategy to eradicate smallpox. If you could find smallpox, you could vaccinate around that case and prevent further transmission. If it had

been a frighteningly [rapid] communicable disease, that strategy would never have worked," Schaffner explains.

In addition, some medical observers question the certitude of the general consensus that all those vaccinated decades ago are again susceptible to smallpox. They argue that those immunized during the eradication campaign may at least have some greater protection against fatal infection.²

Regardless, rather than dropping like flies, as many as 70% of those infected with smallpox actually survive and then have lifelong immunity.

While there are many other agents to discuss and prevention plans to outline in the weeks and months ahead, perhaps the greatest protective factor is the unprecedented level of awareness in the health care system. The world has changed so much since Sept. 11th that hospitals are probably more prepared for bioterrorism now than they have ever been. Everywhere, lines of communication have been opened with health departments and affiliated clinics, emergency plans have been reviewed and hot-button phone numbers posted on the wall.

"We're on alert," says **Fran Slater**, RN, MBA, CIC, CPHQ, administrative director of performance improvement at Methodist Hospital in Houston. "We are all on alert."

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Terrorist attacks prompt FBI cyber-warning

Are your computer files vulnerable?

In the wake of the Sept. 11 terrorist attacks, the Federal Bureau of Investigation's National Infrastructure Protection Center has issued an advisory notice that it "expects to see an upswing" in computer-related crime.

The two most likely forms of criminal computer activity the FBI expects to increase include patriotic "hacktivism," or computer hacking by

TB Monitor™ (ISSN# 1082-8664), including **Common Sense about TB™** and **TB Guide for Health Care Workers™**, is published monthly by American Health Consultants®, 3525 Piedmont Road, Building Six, Suite 400, Atlanta, GA 30305. Telephone: (404) 262-7436. Periodical postage paid at Atlanta, GA 30304. POSTMASTER: Send address changes to **TB Monitor™**, P.O. Box 740059, Atlanta, GA 30374.

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Editor: **Alice Alexander**, (404) 371-8067, (alicealex@mindspring.com). Vice President/Group Publisher: **Donald R. Johnston**, (404) 262-5439, (don.johnston@ahcpub.com).

Editorial Group Head: **Glen Harris**, (404) 262-5461, (glen.harris@ahcpub.com).

Managing Editor: **Robin Mason**, (404) 262-5517, (robin.mason@ahcpub.com).

Production Editor: **Brent Winter**.

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Editorial Questions

For questions or comments, call Alice Alexander at (404) 371-8067.

both domestic and foreign fringe groups, and new viruses introduced into computer networks.

In addition, many pros predict more disgruntled present and former employees will be prompted by recent events to use computer virus bombs to get even with employers.

“A significant increase in cyber attacks is likely,” agrees a separate study by the Gartner Group, a Stamford, CT-based consulting firm. “Enterprises must understand this threat and take action to limit their vulnerabilities.”

Here is a list of things the Gartner Group says organizations can do to help protect their communications and information systems from cyber-terrorists:

- Form an internal cyber-incident response team, or contract with an outside vendor to monitor your Internet activity.
- Monitor any web sites your practice operates or is linked to for bugs.
- Contact third-party providers as needed. If internal security procedures are not adequate, contact a managed security service provider or consultant.
- Educate users. Tell them to expect an increase in unwanted “cyber activity.”
- Establish phone numbers or e-mail addresses for reporting suspicious activities.
- Set up multiple communication methods. Make sure decision-makers and response team members have more than one method available to them, such as landline and wireless telephones and e-mail technology.
- Update and distribute contact information for all your staff, key vendors, and business contacts.
- Update virus protection on remote laptops and home computers of staff that interact with office systems.
- Review vendors’ computer security policies.
- Evaluate and test physical security procedures, including access to facilities and interaction with electronic systems. Review procedures for background checks for individuals with access to key information or resources.
- Update virus detection signatures daily, if not more frequently. Scan for viruses at the firewall or server. If scanning network computers, remember that many users manually shut down their scans if they are executed during business hours.
- Initiate vulnerability assessments. These should be performed by trained security professionals, not internal administrators, Gartner advises.
- Disable all inactive accounts. Examine user

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account lists on all systems, removing all unnecessary or default accounts.

- Change passwords on root or administrator accounts.
- Review help desk and password reset procedures. ■

CE objectives

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

- 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. ■

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