The obvious answer of “no” to the question of readiness is not just due to the ongoing loss of experienced staff. Loss of infrastructure is bad enough, but even an well-staffed health department needs safe and effective treatment tools when more than 100 high school students become infected with Mycobacterium tuberculosis following exposure to an infected student and/or staff member at school. There are no drugs known to be safe and effective for children infected with multidrug-resistant (MDR) tuberculosis.

The failure to fully implement the 1989 plan to eliminate tuberculosis in the United States has left local health departments poorly prepared to deal with the Mycobacterium tuberculosis strains resistant to at least isoniazid and rifampin. MDR strains account for 310,000 of the 8.7 million cases of tuberculosis globally with about 28,000 of those being extensively drug-resistant (XDR). A key recommendation from the tuberculosis elimination plan in 1989 was to “rapidly develop and implement new tools for the diagnosis and treatment of tuberculosis and tuberculosis infection.” Instead of benefiting from the implementation of new safe and effective short-course regimens for active tuberculosis, including drug-resistant strains, health departments still use the four-drug regimen for drug-susceptible tuberculosis that became the standard for the United States in 1993. This regimen, developed after more than 40 years of clinical research, was rendered useless for the hundreds of cases of MDR tuberculosis in U.S. cities in the 1980s and 1990s. For treating MDR cases, physicians reverted to old, 18- to 24-month regimens, with the addition of off-label use of fluoroquinolones in the 1990s. These are the same regimens your local health department uses today.

School outbreaks of MDR and XDR tuberculosis are neither unheard of nor a new phenomenon. An infectious case of tuberculosis due to a strain resistant to isoniazid, streptomycin, and para amino salicylic acid was diagnosed in a high school student in Corinth, Mississippi, in 1976. Consistent with expectations that up to 5 percent of untreated infected contacts will progress to active disease within 2 years, four secondary cases of tuberculosis, one fatal, were diagnosed among more than 100 infected contacts. Treatment recommendations for individuals infected with isoniazid-resistant tuberculosis were
changed from isoniazid to rifamin and/or combination therapy after the Corinth outbreak, although there was no evidence base for the recommendation. A health department in California faced a large high school outbreak with 13 secondary cases of tuberculosis due to a strain with isoniazid, ethambutol, and ethionamide resistance in the early 1990s. Although there was still no evidence base for the recommendation, 157 infected students were prescribed rifampin treatment, and 22 were prescribed ofloxacin plus pyrazinamide for exposure to secondary cases that progressed to MDR tuberculosis.\(^6\)

So, how good are the odds that your local health department will avoid having a highly infectious MDR tuberculosis case in a high school? With just 1.3 percent of reported cases (124) being due to MDR tuberculosis in the United States in 2011, the odds are relatively low, and lower still for XDR tuberculosis, with only 6 cases in 2011.\(^2\) For most real and even theoretical microbial threats, our public health officials believe that being prepared is far better than being lucky. Unfortunately, that is not how our policy makers have viewed the threat of tuberculosis. It is not too late to fully implement the 1989 national tuberculosis elimination plan, but with XDR tuberculosis on the horizon, time is running out.

References
