

## Editorial

# Hospital Tuberculosis: Beyond the Inner City

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See also pages 513, 516, 536.

Tuberculosis (TB) today is not an equal opportunity infection. Occurrence of the disease has focused on the inner city, where dramatic increases of TB disease in the poor, the homeless, the victim of acquired immunodeficiency syndrome (AIDS), and the immigrant are most prominent. The focus is clear. For example, incidence of TB is 10 to 20 times greater in the South Bronx, Brooklyn, and Harlem in New York City than in the United States as a whole.<sup>1</sup> In these large urban areas, population lifestyle as well as the disease make case detection difficult. In addition, many of the inner-city groups in which TB occurs today also are less likely to comply with antituberculous therapy. Such lack of follow-up greatly enhances the likelihood that drug resistance may emerge and increases the potential for transmission in this setting. Directly observed therapy (DOT) is a proven mechanism to deal with these problems.<sup>2</sup> However, accomplishing DOT in these areas demands new cadres of case workers to implement programs.

The inner city also is the most likely site for nosocomial TB. Some hospitals in these areas can account for sizable proportions of an area's cases. For example, at Grady Memorial Hospital in Atlanta, more than 250 new TB cases were diagnosed in 1992; if this metropolitan public hospital were its own state, it would have ranked about 26th in case total for the entire country.<sup>3</sup> Because rates of TB are high in the patient population of large urban hospitals, and because these clients also are more likely to have AIDS or other associated diseases that make TB detection difficult,

this setting is where risk of transmission to healthcare workers and other patients rises. In such an environment, it is logical and important to implement procedures for prevention of nosocomial transmission. Guidelines to accomplish this have emerged from investigations of several nosocomial outbreaks in urban hospitals in the past few years.<sup>4</sup> Implementation of these procedures has proven effective in several urban hospitals.<sup>3,5</sup> However, such guidelines have been extraordinarily costly to implement.<sup>6</sup>

When one leaves the inner city, the best tactics to deal with TB are less certain. In the 1980s and earlier, the national plan for eradication of TB was aimed primarily at treating elderly individuals, who developed disease due to reactivation of long-ago infection. These cases could arise as easily in the suburbs or rural areas as in the city center. By contrast, recent national plans and guidelines to deal with multidrug-resistant TB (MDR-TB) dwell heavily (almost exclusively) on the inner-city constituency and on primary and directly transmitted infection.<sup>7</sup> What to do with the cases outside these main centers of the battle against TB and MDR-TB is not delineated clearly. Yet, national plans seem to assume that what is needed in the inner city should be implemented as well in suburban or rural settings. This is not necessarily so. What makes medical and economic sense in the metropolitan area may not be either efficient or effective when the setting shifts and the target population changes.<sup>8</sup>

In this issue, Cox et al<sup>9</sup> and Bryan and Brenner<sup>10</sup> have shared with us in two separate articles their useful

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*94-ED-076. McGowan JE Jr. Hospital tuberculosis: beyond the inner city. Infect Control Hosp Epidemiol 1994;15:510-512.*

perspective on this middle ground of TB control. Working in Columbia, South Carolina, a setting where TB epidemiology is not typical of the inner city, they have developed and refined tactics that provide both effective and efficient control. Two major areas of interest in their reports are patterns of mycobacterial disease and systems for TB surveillance.

#### **PATTERN OF TB OCCURRENCE**

One article describes careful studies of mycobacterial disease in a patient setting that reflects few of the patterns characteristic of inner-city disease.<sup>9</sup> In contrast to the national picture, the frequency of TB patients at this hospital declined between 1976 and 1991, and the recovery of nontuberculous mycobacteria remained relatively stable. Here, too, AIDS and infection with human immunodeficiency virus have not presented the all-consuming difficulties that many urban centers have experienced.

The lesson from Columbia has special importance because it likely reflects a situation that holds in most areas of the United States, where TB has not had the great revival that characterizes low-income areas of our major cities. Hospital epidemiologists in these suburban and rural areas are faced with mandates from federal agencies to implement programs for prevention of nosocomial transmission and community spread. This is no different from the dictates faced by their colleagues from public hospitals and other centers. The difference is that policies and work rules that come from a "one size fits all" approach of governmental agencies often are unreasonable, illogical, and unworkable in the great majority of settings where TB has not had a great resurgence.<sup>8</sup>

An example of this is given in the discussion section of the article.<sup>9</sup> At this community teaching hospital over the past 15 years, the likelihood that a patient's positive acid-fast bacilli smear represents *Mycobacterium avium* complex rather than *Mycobacterium tuberculosis* has declined to barely higher than 50%. To the authors, this means that full implementation of the rules and guidelines set by federal and state agencies probably would be inappropriately costly and relatively ineffective ways to prevent nosocomial TB spread. Such waste cannot be tolerated at a time when resources for healthcare are being monitored and reduced whenever possible. Unfortunately, it appears that lack of coordination allows some federal agencies to continue to pursue goals such as safety at any price while others forcefully demand spending cuts. All healthcare institutions, which are obliged to try to satisfy these conflicting demands, are the losers in this process. Perhaps, however, hospitals outside the inner city have a little more reason to feel whipsawed by this regulatory confusion.

Fortunately, three recent communications suggest that some relief may be at hand. The first is recommendations from the Centers for Disease Control and Prevention (CDC) for initial therapy of TB in the era of multidrug resistance.<sup>11</sup> Rather than insisting that four-drug empiric treatment be used everywhere, this guideline recognizes that in communities where rates of isoniazid resistance are below 4%, an initial TB treatment regimen with fewer than four drugs may be reasonable.

A second example is the proposed revision in the CDC's guidelines for prevention of nosocomial TB.<sup>4</sup> In this publication, hospitals are urged to conduct an assessment of risk of TB transmission within the institution and to base the frequency of certain control steps on this assessment.<sup>12</sup> This change from demanding a single approach for all institutions is most welcome, and the article from Cox et al emphasizes the value of such leeway.

The third example is a document in *the Federal Register*<sup>13</sup> from the National Institute of Occupational Safety and Health. This gives notice of a proposed rule to replace existing regulations for particulate respirators and to upgrade testing requirements for such filtering masks. The proposal is a first step to discarding the odious current recommendations for exclusive use of the powered air-purifying respirator or respirators with high-efficiency particulate air filters in TB prevention programs. Instead, the revised regulations would allow a wider variety of protective masks for use in prevention of TB transmission. Such a change would make moot the loud and acrimonious debate about cost versus efficiency of such masks in the hospital setting. One hopes that professional societies, healthcare institutions, and other interested parties will provide loud and immediate support for this proposed step. In the absence of scientific methods to measure droplet nuclei concentrations, mechanical controls such as personal protective equipment may have been overemphasized.<sup>14</sup> Some flexibility in approach to these controls will be a welcome step until the progress of science permits objective evaluation of this subject.

#### **SURVEILLANCE FOR TB**

The second article from the investigators at Richland Memorial Hospital<sup>10</sup> speaks about the value of a registry for TB patients as an integral part of a hospital's program to contain TB. Surveillance remains the key to controlling TB. In inner-city areas, careful surveillance for case occurrence and careful follow-up of patients as they wend their way through the long course of therapy remains the cornerstone to dealing with the disease. However, careful surveillance also characterizes successful programs for TB manage-

ment in nonmetropolitan areas as well. Thus, today's control plans require new and innovative programs for case-finding and for contact tracing, regardless of geography.<sup>15</sup>

Surveillance also remains the key to control of nosocomial TB. Careful surveillance of patients entering the emergency room and other clinic and admitting areas is one of the most important ways to protect other patients and healthcare workers from the patient with unsuspected TB disease.<sup>16</sup> This is recognized in the proposed revision of CDC guidelines, which stress the primary importance of administrative controls to enhance case recognition.<sup>4</sup> Careful surveillance of patients entering the emergency room and other clinic and admitting areas remains of great importance in all areas and all settings.<sup>12</sup> A second aspect, surveillance of healthcare workers, recently has received renewed emphasis. It seems difficult to believe that as few as 8 years ago, debate in this journal centered on how little surveillance should be done in this area, rather than how much.<sup>17</sup> Nevertheless, importance of skin testing for all hospital workers, whether employees or not, is a major tenet of recent and proposed controls.<sup>4,18</sup>

Despite the importance of surveillance, the best methods for its implementation remain a question. While there is mandated national reporting of cases, there is no systematic attempt to collect data on completion rates for TB treatment. Prevalence registries of those who have finished such therapy have been proposed as a tool for this purpose.<sup>15</sup> Such a registry fits well with the concept advanced by Bryan and Brenner.<sup>10</sup>

Perhaps the most intriguing part of their presentation is the emphasis on the TB registry as a tool for patient management and quality assurance. As hospitals become healthcare systems, responsibility for management of TB patients will be theirs, whether the patient is hospitalized or not. A registry can be used as a focal point for determining that patients released from the acute care hospital are not lost to follow-up. This may be a key attraction for institutions that formerly passed responsibility for TB follow-up either to public health clinics or to the patient's personal physician. Within the hospital, use of the registry to assure that procedures on the books for TB care actually are implemented is the essence of quality assurance and continuous quality improvement at its best. The organized feedback of registry data to the infection control committee and medical staff would seem a critical attribute of the program.

#### THE BIG QUESTION-WILL WHAT WORKS FOR YOU WORK FOR ME?

Bellin notes that only the integration of surveil-

lance, healthcare research, and population-based outcome research will allow us to control this old foe, TB.<sup>15</sup> The key to dealing with all these aspects of TB, as with other nosocomial infections, is fitting the control activities to the specific situation. To this end, the articles in this issue perform a valuable service.<sup>9,10</sup> They remind us that efficient and effective solutions to hospital and healthcare problems should be generated at the local level rather than by national mandates for uniform approaches.

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