

Editorial: Nihilism and Pragmatism in Tuberculosis Control

In the history of efforts to control tuberculosis (TB), a disease associated with poverty, a central debate has been between those calling for structural social reforms and those calling for targeted public health interventions. In decades past, the argument was often between reformers and segregators: those calling for improved housing and nutrition for the poor and those favoring removal of the afflicted to sanatoriums. Consensus remained elusive. In a classic 1926 paper, Sir Arthur Newsholme put it well: "Perhaps no single disease has been so fertile as tuberculosis in divergent views as to its causation and means for its prevention; and these differences of outlook continue notwithstanding our certain knowledge that in the absence of the tubercle bacillus, there can be no tuberculosis."¹

With the midcentury development of effective chemotherapy, TB debates continued. Although the new medications were highly effective if taken correctly, TB deaths nonetheless persisted. In the post-antibiotic era, then, the debate turned on the question of "compliance." Some experts argued that the heart of the problem was patient noncompliance, while others insisted that structural and economic barriers to effective therapy blocked patients from completing treatment.

At the heart of these debates is the perennial question, central to social theory, of individual agency and structural constraint. How is a patient's "compliance" to be understood: as individual action, as a response to social circumstances or cultural background, or as an effect of structural factors and pressures, including access to treatment? What are the relative contributions to TB outcomes of patient-related factors and quality of TB services? In settings of extreme poverty, can targeted interventions improve rates of TB cure? Some of our own research has attempted to answer these questions. In our experience in rural Haiti, where cultural factors were held by providers to lead to poor outcomes, we learned instead that structural barriers are the main deciding factor. We also discovered that relatively limited public health interventions, including nutritional and financial assistance during therapy, could overcome these barriers.^{2,3}

How, precisely, does improved nutrition decrease TB death rates? Thomas McKeown⁴ argued more than 3 decades ago that, in England and Wales, the fall in crude mortality from 1848 to 1971 was due largely to improved nutrition rather than to targeted public health interventions. In this view, neither medicine nor public health efforts had a significant impact on death rates in the century

preceding antibiotics. McKeown's influential work, as Fairchild and Oppenheimer⁵ report, has influenced an entire generation of social scientists, historians, and policymakers.

In some circles, an extreme version of the McKeown thesis⁴ leads to what Ronald Bayer⁶ has termed "public health nihilism." Why bother with public health interventions if economics and nutrition are the real life-savers? Into the midst of this debate now comes directly observed therapy, touted by some as the panacea for failed TB programs globally. When part of an effective program, directly observed therapy clearly can improve therapy completion rates. New and harder questions must now be posed. What is the relative contribution of directly observed therapy to the improvements in TB control now registered in many countries? In what settings does directly observed therapy replace the "therapeutic anarchy" that has led to both low rates of completion and high rates of resistance to first-line drugs? In what settings does directly observed therapy serve primarily as a means of remediating inequalities of access to effective therapy? How, in the postantibiotic era, will increased access to TB therapy be compromised by poor nutrition when food shortages are not addressed by a highly focused TB intervention? In what settings are rates of drug resistance high enough that directly observed therapy with first-line drugs actually serves to amplify resistance rather than decrease it? Finally, what is the downside of directly observed therapy, which is costly and has been branded, in certain circumstances, as coercive?

Asking "Is universal directly observed therapy necessary?" Bayer and his coworkers⁷ jump into the fray with the first major review of the relative contribution of directly observed therapy to improved outcomes in a resource-rich country, the United States. They show that directly observed therapy can significantly improve outcomes in areas where therapy completion rates have been low. In areas where therapy completion rates were already high, the impact of directly observed therapy was less impressive. Good, well-managed programs, they conclude, may not require directly observed therapy for all patients. This view has been offered by one of us in a previous editorial.⁸

This may lend credence to one of McKeown's arguments⁴: that, in general, the usefulness of clinical interventions is often exaggerated, especially soon after their introduction. But directly observed therapy undermines public health nihilism wherever it improves TB

outcomes through what is, after all, a modest and focused public health intervention. The question is, How narrowly focused is this intervention? Close scrutiny of settings in which directly observed therapy is held to be key to reversing unwelcome trends in TB control reveals it to have been merely one component of improved services. Successful TB control reminds us that targeted interventions can work without broad social reform, but individual targeted interventions (i.e., directly observed therapy) are rarely solely responsible for change. The relative importance of directly observed therapy vis-à-vis other, complementary interventions—ranging from nutritional supplementation to making clinics more "user friendly"—reminds us, simply, that TB epidemics are different in different settings for at least 3 sets of reasons: host-parasite factors (ranging from HIV co-infection to drug resistance), the material circumstances of the patients, and the adequacy of TB control programs. Only a broad biosocial view brings these all into focus, as Fairchild and Oppenheimer⁵ suggest in underlining the shortcomings of McKeown's broad-brush approach.

Fairchild and Oppenheimer also underline, as did Newsholme, that segregation of infectious patients and eradication of bovine tuberculosis were behind declining TB rates in industrialized countries. As we look forward, however, a new set of challenges faces us. First, bovine tuberculosis is not a major contributor to global TB mortality. Second, what role should patient segregation play now, when we possess highly effective therapies? Growing inequalities in terms of risk and resources have led to lopsided investments in TB control: we see, for example, an inordinate focus on infection control in industrialized countries even as it is routinely argued that the treatment of drug-resistant TB is not "cost-effective" in resource-poor countries.⁹ At this writing, many public health experts are still willing to argue that treating active multidrug-resistant TB is not a priority, even in settings where drug resistance has already been shown to be a major problem, such as Russia and the Baltic states.¹⁰ In an increasingly interconnected world, one in which infections know no borders, double standards of therapy are built on the fiction of social quarantine.

To return to the nihilism-pragmatism debate, we would be better off, clearly, if

Editor's Note. See related articles by Bayer et al. (p 1052) and Fairchild and Oppenheimer (p 1105) in this issue.

there were no need for shelters, prisons, or refugee camps. But it is also true that we can treat and prevent TB in shelters—and in jails, prisons, refugee camps, and inner-city slums. Poverty, homelessness, HIV, cultural and linguistic barriers, jails, shelters, prisons, and hospitals still exist in New York, but TB cases are declining there as a result of the efficacy of public health interventions—namely, effective therapy and better infection control—bolstered by generous spending.¹¹ These successes remind us that we must avoid falling into what might be termed the “Luddite trap.” Since poverty and inequality lie at the heart of TB’s persistence and reemergence, we should focus on these root problems as well as on the distal one of treating the sick. But since we have not yet discovered the formula for curing our world of poverty and inequality, we must move forward with focused interventions and insist on universal access to high-quality TB care, which in many settings will include directly observed therapy and other complementary strategies. “It is useful to remember,” remarked historian Barbara Rosenkrantz,¹² “that a ‘social disease’ typi-

cally affects the socially marginal, who can ill afford to wait for the fundamental insights and social transformations that challenge the well-established associations of disadvantage and disease.” □

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Editorial: What It Takes to Control Tuberculosis

The resurgence of tuberculosis (TB) in the United States in the period 1985 through 1992 was probably the result of a number of factors, including (1) a highly susceptible population of HIV-infected persons, (2) poor infection control practices in institutional settings, (3) increased rates of drug-resistant tuberculosis, (4) increased numbers of immigrants from areas with high rates of TB, and (5) failure of TB control programs to ensure that persons with active TB were cured. The relative contributions of these 5 factors to the resurgence of TB has been difficult to assess. However, the paper by McKenna et al.¹ in this issue of the *Journal* highlights the importance of ensuring completion of therapy in regaining control of the TB epidemic in the United States. The authors provide strong evidence that failure to ensure such completion was a major factor in the increased prevalence of TB in the mid-1980s to early 1990s.

In their paper, McKenna et al. compare US national TB surveillance data from 2 periods: 1991/92, when the peak of the resurgence was reached, and 1993/94, when the number of cases had begun to decrease. The findings are quite revealing. First, there was a significant relationship between reduction in TB cases and 3 measures of a successful TB control program: achieving sputum conversion, completing therapy, and evaluating con-

tacts of patients with active cases. Second, the greatest relative reduction in cases occurred in the areas where AIDS incidence was highest. Third, TB caused by organisms resistant to isoniazid and rifampin (multidrug-resistant TB) was reduced, most notably in areas where TB programs had the best completion of therapy rates. Fourth, the number of foreign-born patients with TB significantly increased rather than decreased during the observation period.

Similar declines in TB morbidity in New Jersey are reported in this issue by Liu et al.,² and these declines are temporally correlated with marked increases in directly observed therapy. In addition, the report in this issue by Bayer et al.³ shows that increases in therapy completion rates are often associated with increased use of directly observed therapy. Unfortunately, the failure of this latter study to use a uniform definition of directly observed therapy and the lack of information about other factors influencing completion of therapy (such as use of incentives, enablers, and case management) make interpretation of the study’s conclusions about the value of a goal of universal directly observed therapy questionable.

However, when viewed together, these reports support the conclusion reached by investigators in New York City that the decline in TB cases is a result of the interruption of

ongoing transmission achieved through greater success in treating active cases of pulmonary TB.⁴ Success in treating active cases means ensuring that medications are taken until the patient is cured; in most programs, this means a commitment to directly observed therapy. This strategy, while labor intensive, can be accomplished with presently available technology supplemented by political will and adequate resources. The overall costs are more than balanced by prevention of the spread of TB and prevention of drug resistance.⁵ This strategy has been endorsed by the World Health Organization for control of TB on a worldwide basis.⁶

That reductions seen by McKenna et al.¹ were greatest in areas where AIDS incidence was highest suggests that, among persons with AIDS, most TB is recently acquired. In the United States, reactivation of previously latent TB in persons with advanced HIV has recently been shown to be much lower than had been previously believed.⁷ Unexpectedly infrequent reactivation may be explained by the likelihood that, in an HIV-infected person who is capable of reactivation of TB,

Editor’s Note. See related articles by Bayer et al. (p 1052), McKenna et al. (p 1059), and Liu et al. (p 1064) in this issue.