

Letters to the Editor

Isolation Rooms for TB Control

To the Editor:

In their article "Isolation Rooms for Tuberculosis Control" (1993;14:619-622) Nicas et al appear to endorse the California Department of Health Service's recommendation for the routine use of high-efficiency particulate air (HEPA)-filter respirators and, in some circumstances, the use of powered air-purifying respirators with HEPA-filters. Compared with surgical masks, these devices reduce face-seal leakage by 50% to 90%, respectively, and filter leakage by more than 99%.¹ They note that such devices are cumbersome, may frighten and alienate patients, and may interfere with healthcare delivery. Still, they state, "These arguments... do not justify allowing healthcare workers to avoid using proper protective equipment" (emphasis added).

Current focus on the use of complex and expensive HEPA-filter devices for protection against acquisition of tuberculosis (TB) is prompted by the recent spate of institutional outbreaks of TB in New York, Florida, and elsewhere. Yet analysis of the factors contributing to these outbreaks generally revealed such basic errors as failure to consider TB in the differential diagnosis, delayed initiation and inadequate duration of TB isolation, inadequate isolation room ventilation, and lapses in standard respiratory isolation practices.⁷

HEPA-filter masks will not serve to prevent nosocomial transmission of TB if the diagnosis is not entertained and if respiratory precautions are not instituted in the first place. Although fitted HEPA-filter respirators undoubtedly can reduce further droplet nuclei exposure, their incremental benefit in preventing TB could be marginal in situations in which the other, more

basic features of respiratory isolation are initiated early and maintained appropriately. The authors' contention that only advanced-design respirators constitute "proper protective equipment" requires clinical validation before these costly and intrusive devices can be recommended for routine use.

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REFERENCE

1. Centers for Disease Control and Prevention. Guidelines for preventing the transmission of tuberculosis in health-care facilities, second edition. *Federal Register* 1993;58:52810-52854.

The authors reply.

We appreciate the points raised by Dr. Mintz in his letter because these issues are of considerable concern to both infection control and occupational health practitioners alike. While the focus of our editorial was the design and testing of isolation rooms for tuberculosis (TB) patients, we also recommended the use of high-efficiency particulate air (HEPA)-filter respirators by healthcare workers, including the use of powered air-purifying respirators during cough-inducing procedures unless adequate source control measures are in place.

We concur that a TB control program must include fundamental elements, such as the rapid identification and adequate respiratory isolation of patients suspected to have TB, as well as the appropriate use of respiratory protection by healthcare workers. We do not recommend that all healthcare workers wear respirators at all times or when attending all patients. Rather, in specific situations (identified as part of a risk assessment conducted by each facility) healthcare workers should wear HEPA-filter respirators as

minimum protection. Because the issues involved in using respirators are complex and deserve a thoughtful but lengthy discussion, we plan to submit an article providing the rationale for this recommendation at a later date. In brief, we believe that the increment in protection afforded by HEPA-filter respirators is substantial. While disposable HEPA-filter respirators are more expensive than disposable dust-mist respirators, reusable ones are comparable in cost and justify overcoming problems to gain acceptance.

Dr. Mintz notes that numerous nosocomial TB outbreaks apparently involved breaks in standard TB infection control measures and improper functioning of isolation rooms. However, to our knowledge, none of these investigations have addressed directly the contribution of respirators in reducing occupational TB transmission. Although transmission reportedly has decreased in outbreak areas of hospitals following implementation of TB control measures, we believe the observation period too short and the number of workers monitored too few to draw reliable conclusions about the relative efficacy of the control measures, including respiratory protection. In our view, it has not been established clearly that the use of disposable dust-mist respirators has reduced occupational TB transmission adequately in these settings. Given the excessive penetration of disposable dust-mist respirators, routine use of these respirators should not be recommended for protection against TB aerosols.

While clinical validation studies are desirable, it probably will be difficult to isolate the effect of any one control measure (eg, use of a particular type of respirator) in reducing occupational TB transmission. Until such studies can demonstrate reliably the efficacy of a particular type of respira-