Human Health and the Environment: Are Physician Educators Lagging Behind?

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In the past 2 decades, numerous household and industrial products have been conclusively linked to human disease. Lead, carbon monoxide, and asbestos are the best known environmental toxins. Research has also established associations of in utero exposure to polychlorinated biphenyls with intelligence quotient deficits in children; mercury in interior latex paint with neurologic disorders; pollutants in drinking water with malignancies of the skin, lymph, and bone marrow. Most recently, dieldrin, an organochlorine used in pesticides, has been associated with a significantly increased, dose-related risk of breast cancer.

In response to these accumulating data, national organizations have taken steps to establish a permanent foothold for environmental medicine in US medical education. The National Institute of Environmental Health Sciences (NIEHS) has awarded over $13 million to US medical schools for the inclusion of environmental medicine in traditional academic curricula. And, the Institute of Medicine has recommended that all medical students acquire basic skills in eliciting an “exposure history” and a knowledge of the risk factors for environmental diseases.

Two Model Programs in Environmental Medicine

At Wayne State University School of Medicine, the Department of Family Medicine has put the Institute of Medicine recommendations into practice by instituting a “longitudinal integrated curriculum” that continues through all 4 years of medical school. In the first 2 years, faculty members give integrated environmental lectures in pathology, pharmacology, and public health/preventive medicine. During the third year, students view “Introduction to the Exposure History,” a video that is followed by hands-on clinical applications during the family medicine clerkship. At the end of the third year, students take a clinical station-based examination that covers the most commonly occurring environmental diseases, including syndromes caused by exposure to lead, pesticides, asbestos, methyl mercury, organic solvents, carbon monoxide, particulate matter, bloodborne pathogens, polychlorinated biphenyls, and ionizing radiation (Sharon Popp, PhD, Maryjean Schenk, MD, Wayne State University School of Medicine, Division of Occupational and Environmental Medicine, written communication, March 1998).

Internists at the University of Maryland have also developed a program in environmental medicine. This group used its NIEHS grant to implement a 3-phase curriculum. The first year commences with a “kickoff session,” in which student groups tackle 1 of 8 patient cases on environmental disease. Next, the faculty transforms the mezzanine of the medical school into an environmental medicine bazaar where students consult specialists at booths set up by outside organizations, such as the Maryland Occupational Safety and Health Administration and the Poison Control Center. The second year includes a 16-hour, problem-based learning course and a workplace visit. The faculty has also produced a 15-minute video on preventing environmental disease entitled “The Doctor Never Asks Me” as well as a sourcebook on curricular development (Janie Gordon, ScM, James P. Keogh, MD, University of Maryland School of Medicine, written communication, March 1998).

One of the most promising new academic projects in environmental medicine emphasizes regional epidemiology. The University of Alabama was awarded a 5-year NIEHS grant to study special needs of rural communities including mercury and dioxin poisoning of river-caught catfish, contamination of well water from nitrites in chicken manure, and cotton poison spills (John R. Wheat, MD, MPH, University of Alabama School of Medicine, written communication, March 1998).

Comment

Familiarizing students with environmental medicine early in their medical school training is a challenge for medical educators. Educational exposure on environmentally related disorders should begin early in medical school, when students are first introduced to pathophysiology and physical examination skills. Funding should be provided for research opportunities and curricular development. Programs such as those at Wayne State and the University of Maryland serve as models. Medical school administrators can help form committees that will study the literature on teaching environmental medicine. Finally, medical students need not wait for their deans and professors to take the lead. Rather, they should initiate curricular change on their own, realizing that physicians-in-training often perceive their own generation’s challenges before their mentors do.

References