Role of the Physician in Environmental and Occupational Asthma

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There has been a remarkable increase in recent years of individual and public perceptions about health effects caused by toxic chemical and physical agents in the workplace and elsewhere in the environment. Although the full nature and extent of the health burden resulting from occupational and environmental exposures remain to be elucidated, a consensus has emerged that our health care system is ill-equipped to respond to the perceived or actual consequences of such exposures.[1-3] Indeed, patients increasingly bring questions in this arena to their physicians, who themselves are often at a loss for answers.

The article attempts to identify the factors limiting the role of physicians in the diagnosis, treatment, and prevention of occupational and environmental disease and to identify some strategies to overcome the identified constraints. Emphasis will be placed on the primary care or other first-contact physician, and the discussion will focus broadly on all categories of disease. Much of the information considered here was discussed by a committee of the Institute of Medicine of the National Academy of Sciences in their report, Role of the Primary Care Physician in Occupational and Environmental Medicine.[3] The Institute of Medicine committee concluded that at a minimum, "All primary care physicians should be able to identify possible occupationally or environmentally induced conditions and make the appropriate referrals for followup."[3] Within this minimum standard of care was the expectation of the need of the physician: (1) to know some basic principles of occupational and environmental disease; (2) to know how to take an appropriate occupational and environmental history; (3) to understand the physician's role in the major workers' compensation systems; (4) to be aware of ethical, social, and legal implications of identifying and intervening in these conditions; and (5) to know when and how to report known or suspected hazards to the appropriate agencies, such as public health departments.

Definitions

Because the borders between, and the realms encompassed by, occupational and environmental medicine are not clear-cut, the following is proposed as a somewhat arbitrary but functional definition of the terms. *Occupational medicine* is broadly conceptualized to include all aspects of the relation between occupational factors and health, including the effects of ill health on the ability to work, but with special focus on the effects of work on the development of medical conditions. *Environmental medicine* is more narrowly construed to encompass conditions caused or exacerbated by exposure to (1) toxic chemical substances that are man-made or by human activities are made biologically available; (2) physical agents, such as radiation or noise, whether occurring naturally or as a result of human activities; and (3) increased exposure to biological substances, such as infectious agents, as a result of human activities.[4] Excluded from this definition of environmental medicine are exposures resulting from what may be termed life-style behaviors (*eg*, cigarette smoking, ethanol consumption, sexual behaviors) and broader socioeconomic aspects of the environment. Accordingly, environmental medicine incorporates most but not all aspects of occupational medicine and also includes nonoccupational physical, chemical, and biological exposures within the limits defined above. In terms of occupational and environmental asthma, this definition is intended to exclude the effects of indoor allergens in the home, such as those associated with cats and house dust mites, but not those effects arising from exposures to allergens associated with ventilation and heating systems.

Attention to these definitions is important in defining the role of the physician in these areas. Differences between occupational and environmental medicine include different populations at risk, with environmental exposures invariably lower and less well-defined and associated with a less well-developed scientific data base. Nonetheless, there are important similarities in the fields that have significant implications for future efforts in medical education. Both disciplines require physician skill in characterizing exposures and subsequent risks under varying degrees of uncertainty, and both rely on physician knowledge in several broad subject areas, including toxicology, epidemiology, public health, and engineering. Because of these consonant factors and the limited number of physicians trained in occupational medicine, the Institute of Medicine committee felt it would be counterproductive to advance separate efforts to enhance physicians' roles in occupational and environmental medicine.

Barriers to Enhancing Physician Involvement in Occupational and Environmental Medicine

Deficiencies in Medical Education and the Physician Shortage

Little time is spent in medical college on issues related to occupational and environmental medicine, with a median of 4 hours dedicated to this area by the approximately two thirds of medical schools which specify teaching occupational medicine in their curriculum.[5,6] Perhaps more worrisome are findings that initial enthusiasm about the field wanes during the primary care residency.[7] In addition, a recent survey of chiefs of divisions of general internal medicine revealed that despite increased interest in adding or expanding faculty expertise in occupational and environmental

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medicine, few residents currently receive training in the field, with only 20 programs (22%) offering clinical occupational medicine experiences, elective in almost all.[1]

To address the inadequate training in occupational and environmental medicine at all levels (undergraduate, graduate, and postgraduate continuing education), a greater number of medical faculty must assume major teaching responsibilities. The deficiency in numbers of academic faculty is well documented, with only 59% of 102 US medical schools having even a single identified individual with special interests in occupational medicine, by one study,[8] and in another survey of 127 medical schools, only 37 physicians identified as primarily specializing in occupational medicine.[9] Comparable data on specialists in environmental medicine are unavailable, but the shortage there is likely far greater. Compounding the shortage in academic faculty is the overall shortage in physician specialists in occupational and environmental medicine, both in the community and in public health and related agencies. A recent estimate of the physician shortage, based on various models of supply and need, concluded that there is now a minimum shortfall of 3,100 physicians, approximately three times the number certified to date by the only extant certifying body in the field, the American Board of Preventive Medicine.[9]

Other Constraints

In addition to the problems identified in medical education, several other factors hamper the optimal delivery of clinical services in occupational and environmental medicine. These factors must be addressed if significant inroads are to be made in the recognition, treatment, and prevention of occupationally and environmentally induced conditions, including asthma. An important factor is the relative infrequency with which occupational and environmental conditions are seen or recognized in a nonspecialist physician's practice. Although precise data are lacking, there is good evidence that these diseases go largely unrecognized and unreported.[10-13] Additionally, although some conditions, such as hypersensitivity pneumonitis, are undoubtedly rare, others, such as occupationally related asthma, are likely to account for a sizable proportion (perhaps 10% to 15%) of newly diagnosed asthma cases in a working adult population. Moreover, even if conditions are relatively infrequent, the prevalence of risk factors in the workplace and other environments is high, and so therefore is the physician's opportunity to partake in preventive strategies.

Compounding the concerns about the frequency of these events in a busy physician's practice is the circumstance that occupational and environmental conditions are often difficult to diagnose and time-consuming to evaluate. Tracking down actual exposures and investigating their possible relation to a given condition can be taxing even for the physician fully trained in the field who has information and other resources readily at hand. The primary care physician is even less well-equipped to take on this task without a consulting or information resource to which to turn. Even if health departments and related agencies were able to respond to physician inquiries in this area (and they are not), seeking support from this sector is outside the traditional realm of consideration for primary care physicians. Additionally, responsibility for occupational and environmental health in the United States is significantly fragmented at local, state, and federal levels.

Perhaps more so than some of the largely medical factors discussed above, the current economic, legal, and ethical milieu poses significant disincentives to diagnosing occupational and environmental diseases. Clinical preventive services in general are underpaid in the United States, and many clinical activities in occupational and environmental medicine are preventive in nature. For occupational diseases correctly diagnosed and reported as such, the physician is likely to encounter not only copious paperwork and bureaucratic wrangling, but also delayed payment and insufficient reimbursement for services, since he or she is caught in the void between traditional health insurance, which largely excludes work-related conditions, and a complex and often adversarial workers' compensation system.[14] Moreover, the physician who becomes involved with occupational and environmental issues is at risk for litigious involvement; the anticipation of lawsuits may be a powerful incentive for some physicians not to diagnose or not to report occupationally and environmentally related conditions. The duty to report or follow through suspected or diagnosed hazards and conditions is one of several ethical dilemmas physicians face in treating working patients.[15] Additional concerns, although not unique to occupational and environmental medicine, may be particularly thorny, such as maintaining intact the physician-patient relationship against economic and other forces not to do so, with the physician needing to consider loyalty (*ie*, to whom the physician is most responsible), maintenance of patient confidentiality, and the often imposed role of being a social gatekeeper.

Forces for Change

Despite the several barriers to physician involvement in occupational and environmental medicine, there are a number of factors likely to increase physician activity in this area.[1] Patients are increasingly bringing questions and concerns to their physicians, in part influenced by widespread media attention to environmental hazards. Even large industries are turning to the community to provide occupational and other health services that at one time may have been provided in-house. With increased competition for patient clients, health care providers and organizations seek to capture populations of workers who are relatively better insured and generally healthier than other groups. In this context, the provision of occupational health services is an asset in the marketplace. Finally, there is an incentive for prepaid health plans to identify correctly those diseases and injuries that are work related, as treatment for these conditions is potentially reimbursable from sources outside the plan, namely, through workers' compensation.

It was against this background that the Institute of Medicine committee formed its major conclusions and recommended strategies for implementing proposed changes. The principal recommendations can be summarized broadly in three main categories. First, additional information sources must be made available to the practicing physician, including a single, easy access point for pertinent information, increased articles and reviews in journals, increased discussions of occupational and environmental

medicine topics in continuing education, and increased reports by local and state agencies of disease and exposure patterns. Second, to address the deficiencies in all phases of medical education, there is a significant need to increase both the numbers and the availability of trained specialists in the field and to increase the number of primary care physicians with special expertise in occupational and environmental medicine. It is recognized that this effort will require the concomitant infusion of resources to develop and maintain academic faculty in occupational and environmental medicine and the development of a vigorous research program within medical schools. Third, multiple interventions are needed to remove disincentives to physician involvement, including a national review of the workers' compensation system with particular attention to the attendant reimbursement issues vis-à-vis traditional health insurance.

The US medical care system is not adequately prepared to respond appropriately and efficiently to occupational and environmental health conditions. Even to achieve the minimal objective—the identification by primary care physicians of possible occupationally or environmentally induced conditions, with appropriate referrals for follow-up—will require a strong commitment to implementing several initiatives, namely those of increasing undergraduate and graduate medical education in these fields, improving resources available to the practicing physician, and reducing current disincentives to become involved in related preventive, diagnostic, and treatment activities.

References

1 Cullen MR, Rosenstock L. The challenge of teaching occupational and environmental medicine in internal medicine residencies. Arch Intern Med 1988; 148:2401-04

2 Kottke TE. A strategy to define the role of the primary care physician in occupational and environmental medicine. J Gen Intern Med 1989; 4:320-24

3 Institute of Medicine. Role of the primary care physician in occupational and environmental medicine. Washington, DC: National Academy Press, 1988

4 American College of Physicians Health and Public Policy Committee. Environmental medicine: the internist's role. Ann Intern Med (in press)

5 Levy BS. The teaching of occupational health in American medical schools. J Med Educ 1980; 55:18-22

6 Levy BS. The teaching of occupational health in United States medical schools: five year follow-up of an initial survey. Am J Public Health 1985; 75:79-80

7 Sokas RK, Cloeren M. Occupational health and clinical training. J Occup Med 1987; 29:414-16

8 Association of Teachers of Preventive Medicine. Directory and profile of academic units in preventive medicine. Washington, DC: Association of Teachers of Preventive Medicine, 1986

9 Castorina J. The physician shortage in occupational and environmental medicine. Commissioned by the Institute of Medicine, Committee on Enhancing the Role of Occupational and Environmental Medicine for the Workshop on Manpower Shortage, Woods Hole, Mass, 1989

10 Discher DP, Kleinman GD, Foster FJ. Pilot study for the development of an occupational disease surveillance method. Washington, DC: Government Printing Office (DHEW (NIOSH) 75-162), 1975

11 Blanc PD, Rempel D, Maizlish N, Hiatt P, Olson KR. Occupational illness: case detection by poison control surveillance. Ann Intern Med 1989; 111:238-44

12 National Research Council. Counting inquiries and illnesses in the workplace: proposals for a better system. Washington, DC: National Academy Press, 1987

13 Markowitz SA, Fischer E, Fahs MC, Shapiro J, Landrigan PJ. Occupational disease in New York State: a comprehensive examination. Am J Ind Med 1989; 16:417-35

14 Rosenstock L, Landrigan P. Occupational health: the intersection between clinical medicine and public health. Annu Rev Public Health 1986; 7:337-56

15 Rosenstock L, Hagopian A. Ethical dilemmas in providing health care to workers. Ann Intern Med 1987; 107:375-80

16 Castorina J, Rosenstock L.