collagenase is increased in the bronchoalveolar lavage fluid. In sarcoidosis, collagenase activity is increased in serum, but not in the BAL fluid. Serum collagenase determinations are of no value in diagnosing sarcoidosis.

Type III Procollagen N-Terminal Peptide

N-terminal and C-terminal procollagen peptides are cleaved during collagen synthesis. High levels of procollagen III N-terminal peptides (P-III-P) in the serum have been noted in patients with liver cirrhosis and sarcoidosis, whereas elevated BAL fluid P-III-P levels have been found in interstitial pulmonary fibrosis.

Hyaluronate in BAL Fluid

Hyaluronic acid, a glycosaminoglycan, is present in the pulmonary connective tissue. Increased hyaluronate activity was found in the BAL-fluid of sarcoidosis patients. There was no correlation between hyaluronate levels and the duration of illness, the chest x-ray film findings, and other biochemical abnormalities. The serum hyaluronate levels are normal in sarcoidosis.

Fibronectin

Fibronectin, a large glycoprotein, is found in normal plasma and tissues. The protein attracts fibroblasts and mediates binding of fibroblasts to collagen. Although alveolar macrophages from healthy individuals can produce fibronectin, in sarcoidosis the production increases, on the average, three and a half times that in normal individuals.

MISCELLANEOUS

Transcobalamin II

Although increased levels of transcobalamin II (TCII) have been reported in sarcoidosis, a large number of patients with active sarcoidosis have normal serum TCII levels. Furthermore, serial determinations do not correlate with the clinical course of the disease, radiographic features and other markers of the activity. Increased TCII levels also occur in lymphoma, myeloma, macroglobulinemia, Gaucher's disease and liver diseases.

Conclusion

There are many simple and noninvasive tests for evaluating sarcoidosis. The sensitivity of some of the tests is too low to be helpful for confirming the diagnosis. The serum ACE determinations, however, are useful for monitoring the course of the disease. The role of other biochemical markers of granulomatous processes remains to be established.

Om P. Sharma, M.D., F.C.C.P.
Los Angeles

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Pulmonary Medicine Training

Time to Pull in the Reins

The National Study of Internal Medicine Manpower (NaSIMM) has just published its most recent update on residency and fellowship training in internal medicine. The results of the NaSIMM survey should raise concerns among pulmonary medicine specialists. The 1985 update reports that in the academic year 1984-85, the number of pulmonary medicine training programs increased by four, the number of first year fellows increased by 29, and the total number of fellows increased by 45. For comparison, during the preceding four-year period (1980-84), the number of training programs increased by two and the total number of fellows increased by 38.

The sharp increase in fellowship training documented in this year's report is particularly disconcerting when placed in the context of physician manpower projections. In September of 1980, the Graduate Medical Education National Advisory Committee (GMENAC) published its final report. The major conclusion reached by the committee was that there would be a substantial excess of physicians in this country by 1990. In analyzing individual specialties, the committee concluded that, in relative terms,
Pulmonary medicine would be the most oversupplied. In October of 1982, the Ad Hoc Committee on Pulmonary Manpower, American Thoracic Society, concluded that the GMENAC projections were generally correct, although the committee believed that the excess of pulmonary medicine specialists would not be as great as predicted by GMENAC. 3

Although the conclusions reached by GMENAC have been widely criticized, there has been no study which refuted conclusively the GMENAC findings. Indeed, studies performed by the Bureau of Health Professions, Public Health Services, and government agencies in a number of states, have substantiated the GMENAC aggregate manpower projections. The controversy over the GMENAC report revolves around the accuracy of the projections of physician need, and, thus, the issue of relative supply. Again, there are no data that clearly refute the GMENAC conclusions.

In fact, it now appears that the failure to anticipate the explosive growth in enrollment in prepaid health plans (primarily health maintenance organizations) is the most important factor contributing to error in the GMENAC calculations. When compared to the usual community patterns of providing medical care, these plans use fewer physicians. 4 As a result, the GMENAC data probably underestimate seriously the relative oversupply of physicians, both primary care and nonprimary care specialists alike.

Based on this set of facts, the following conclusions seem inescapable: first, there are now, or soon will be, too many pulmonary medicine specialists; second, the excess supply of pulmonary medicine specialists is being unnecessarily aggravated by the continued expansion and proliferation of pulmonary medicine fellowship programs. Why does this situation exist, and what, if anything, should be done about it?

As a colleague and I have argued elsewhere, graduate medical education programs in oversupplied specialties continue to expand and proliferate because the distribution of training positions is insensitive to the relative demand for practitioners in the various specialties. 5 A number of factors which distort both the supply of, and demand for, residency training contribute to the ineffectiveness of market forces in realigning training opportunities to conform to community needs.

The most important factor distorting the supply side of the training market is that residency and fellowship training programs, in and of themselves, satisfy the diverse needs of various elements of the academic community—medical staff members, program directors, department chairmen, medical school deans, and others. The productivity of the staff, the personal reputation of the program director and department chairman, and the prestige of the institution are enhanced by the existence of training programs. These forces, operating in teaching hospitals across the country, have subverted the impact of the market on the supply and distribution of training positions in all specialties.

The demand side of the residency training market is distorted primarily because accurate information about the practice opportunities for specialists is, in economists' jargon, quite expensive. This means simply that, in making an investment in specialty training (selecting a residency or fellowship), it is very difficult, if not impossible, for a potential trainee to obtain accurate information about the market conditions that will exist in geographic locations that might be acceptable to the individual at the time that he or she completes training. Although this problem is greater for medical students who are selecting residency training, it is also a problem for medical residents who are required to select a subspecialty field late in their second, or early in their third, year of residency training.

Clearly, market forces are not operating efficiently in the field of pulmonary medicine when both the number of training programs and the number of trainees continue to increase despite the fact that pulmonary medicine is the most oversupplied of all of the specialties of medicine. Regardless, there are those who would argue that this situation is acceptable, because young men and women completing residency training have the "right" to make their own career decisions, and program directors, by increasing the number of fellowship positions, are simply providing them an opportunity to exercise that right. (Let us put aside for a moment consideration of whether these individuals have the right to be paid while they are training in an oversupplied specialty—more on the government's position on this below.)

The fact is that potential trainees, for the reasons cited above, almost certainly do not possess sufficient information about the relative need for the services of various specialists and, thus, are now making a fully informed career decision when they select a specialty fellowship. Given this situation, it seems inappropriate to justify the number of fellowship positions in any specialty on the basis of the demand for training by potential trainees. On the other hand, program directors do possess sufficient information, in general, about the relative availability of practice opportunities in both the community and academia. Program directors should recognize their responsibility to potential trainees and, in a larger sense, to society as a whole, and should adjust fellowship training capacity appropriately.

Even if the directors of pulmonary medicine training programs could reach a consensus that there should be a decrease in the number of fellows being trained, there is, at present, no mechanism in place which

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would allow them to reach agreement on the positions that should be eliminated. Unfortunately, the federal government may solve this dilemma while the issue is being discussed or studied in more detail. The U.S. Congress proposed last year to either eliminate, or place limits on, the use of Medicare funds to support internal medicine subspecialty training, primarily because of the relative oversupply in all subspecialty fields. If enacted into law, this approach would force, in an indiscriminate fashion, all teaching hospitals to decrease the size of their fellowship program.

If other third party payers were to follow the government’s lead, fellowship training would be available only in those institutions which could support fellowships from revenue sources other than hospital funds. Almost certainly, under this set of circumstances, funds would be available from local sources to provide adequate support for some training programs of questionable quality. The ultimate result of government action, therefore, might be fewer programs—a desirable outcome—but, depending upon the relative proportions of the mix of local and national training funds, there is a risk that the overall quality of available training opportunities might be lower.

Surely, the current community of pulmonary medicine specialists can do better for the young men and women who may consider entering the field. The specialty must accept the compelling need for downsizing the existing training capacity. At the same time, a mechanism must be found to ensure that training funds are distributed to the best training programs, so that the overall quality of training can be maintained. As a means of fulfilling these goals, it would be useful to attempt to develop a consensus on a national plan for pulmonary medicine training that would restrict, in some equitable way, the number of fellowship positions and set forth rigid, not minimum, standards of quality.

In order to initiate this process, the College, in concert with other pulmonary specialty societies, should sponsor a national forum committed to this effort. A working group should be impaneled to see that these issues are discussed candidly and openly with all interested parties—program directors, accreditors, funding sources, federal legislators and their staffs, and other professional societies taking responsible positions on manpower issues. From the start, the process must be committed to the development of a plan for action, not simply the generation of a statement of principles.

The task is a formidable one; no better reason for starting sooner, rather than later. The Congress is poised to take action and the next NaSIMM report is only 12 months away!

Michael E. Whitcomb, M.D., F.C.C.P.
Columbus

Assistant Vice President for Health Services; Professor of Medicine, Ohio State University.

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