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# Projections of the Future Supply of Family Physicians in Connecticut: A Basis for Regional Planning

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**Background.** There is a growing consensus that there is a shortage of primary care physicians in the United States. Many proposals have been made to increase the national supply of such physicians; however, because regional physician distribution and needs are highly variable, such proposals require evaluation in light of regional physician demands.

**Methods.** An examination was conducted of the projected supply in the year 2002 of active, nonfederal family physicians and general practitioners (FP/GPs) involved in direct patient care on a state-by-state basis, with particular focus on Connecticut. Data on the 1992 supply and demographics of FP/GPs were obtained from the American Medical Association Physician Masterfile. These data together with residency graduation, regional retention, and interstate migration data were used to project state FP/GP supplies in 2002 by estimating additions to and losses from state supplies between 1992 and 2002.

**Results.** In 1992, Connecticut had relatively fewer and older FP/GPs than the nation as a whole. By 2002, the supply of Connecticut FP/GPs is projected to decrease by 9%. Nine other states have similar potential for a net loss of FP/GPs over the same period.

**Conclusions.** In the context of a national shortage of primary care physicians, a decline in the supply of FP/GPs in 10 states would be undesirable. Such a decline in the number of FP/GPs in undersupplied states could be averted by increasing the number of graduates from state residency programs, importing FP/GPs from out of state, promoting retention of state FP/GPs and residency graduates, and retraining existing state physicians in family practice or primary care.

**Key words.** Family physicians; primary health care; medically underserved area; education, professional, retraining. (*J Fam Pract* 1995; 41:451-455)

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There is a growing consensus regarding the shortage of primary care physicians (ie, family and general physicians, general internists, and general pediatricians) in the United States. In response, many groups are calling for increased production. The Council on Graduate Medical Education recently recommended that "given health care needs, at least 50% of residency graduates should be entering generalist careers. . . ."<sup>1</sup> The Physician Payment Review Commission has considered similar changes.<sup>2</sup> Virtually all health care reform proposals recently before

Congress have included provisions for increasing the national supply of generalist physicians.<sup>3</sup>

Regional physician distribution in the United States, however, both in aggregate and by specialty, is highly variable,<sup>4</sup> and regional needs vary widely. Even if national goals for primary care staffing are achieved, uneven distribution would likely result in shortages in some states and surpluses in others. Therefore, national proposals should be evaluated in light of current and projected regional physician supplies, and the possibility of regional input into the implementation of national policies should be considered.

This study included an examination of regional 1992 and projected 2002 supplies of family and general practitioners (FP/GPs), who in 1992 comprised more than one third of all US primary care physicians.<sup>5</sup> Analysis was per-

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formed on a state-by-state basis, with particular focus on Connecticut, a single state model for the implementation of national policy at the regional level.

## Methods

Data on the supply and demographics of active, nonfederal, nonresident FP/GPs involved in direct patient care between 1975 and 1992 (the last year for which complete data are available) were obtained from the American Medical Association Physician Masterfile.<sup>6,7</sup> Federal allopathic physicians and osteopathic physicians were not included, as they respectively make up less than 1%<sup>6</sup> and 5% (personal communication, Michael Walsch, American Osteopathic Association, 1995) of Connecticut FP/GPs. Population data were obtained from United States Bureau of the Census reports.<sup>8</sup> In-state retention rates for Connecticut family practice residency graduates from 1976 to 1994 were obtained from listings maintained by the individual residency programs (personal communication, directors of residency programs at Middlesex Hospital in Middletown, University of Connecticut in Hartford, and St Joseph's Hospital in Stamford, Connecticut, 1995). Data on 1993 in-migration and out-migration of Connecticut FP/GPs were provided by the Connecticut Academy of Family Physicians (personal communication, Arthur Schuman, Connecticut Academy of Family Physicians, 1994).

Using the above data, projections of the Connecticut supply of FP/GPs in the year 2002 were made as follows: (a) losses from the state supply over the decade 1992 to 2002, ie, estimated out-migration of Connecticut FP/GPs ( $n=40$ ) plus projected retirements ( $n=185$ ), assuming that all Connecticut FP/GPs over the age 60 years in 1992 will retire by 2002,<sup>6</sup> were subtracted from (b) additions to the state supply, ie, estimated in-migration of non-Connecticut FP/GPs ( $n=110$ ) plus estimated state residency outputs,<sup>9</sup> corrected for the average in-state retention rate from 1976 to 1994 ( $n=73$ ).

Projected changes in FP/GP supply in states other than Connecticut over the decade 1992 to 2002 were calculated by subtracting expected retirements (assuming that all FP/GPs over age 60 in 1992 will retire by 2002)<sup>6</sup> from total residency output (not corrected for in-state retention rates, as state-by-state rates are not available).<sup>9</sup> Since there are also no data available on rates of in-migration and out-migration for states other than Connecticut, in-migration and out-migration were therefore assumed to be equal.

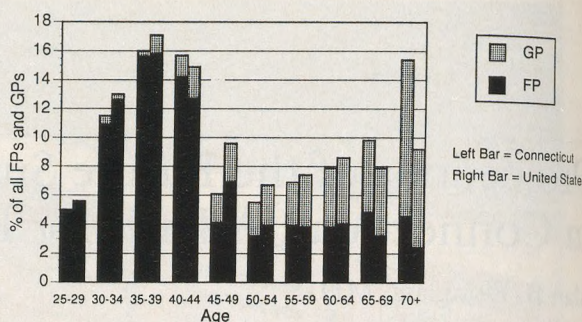


Figure 1. Distribution of Connecticut and US nonfederal family and generalist physicians in direct patient care for 1992, by physician age. Data from *Facts About Family Practice* (Table 5).<sup>7</sup>

## Results

In 1992, Connecticut had more total physicians relative to its population (7405, or 226 per 100,000 inhabitants) than did the United States as a whole (427,995, or 167 per 100,000 inhabitants). However, only 5.3% of Connecticut physicians were FP/GPs (346 FPs, 167 GPs),<sup>6</sup> compared with 11.6% nationally (41,850 FPs, 19,728 GPs).<sup>6</sup> When considered in the aggregate, the age distributions of both Connecticut and national FP/GPs followed a bimodal distribution (Figure 1). An early peak occurred around the age of 35 years and was composed primarily of FPs. Another peak around the age of 65 was composed primarily of GPs.<sup>7</sup> Age distributions for Connecticut and the United States were relatively similar, with the exception of Connecticut having proportionately more older FP/GPs. In 1992, 24% of all physicians, regardless of specialty, in both Connecticut and the United States were over the age of 55 years<sup>6,10</sup>; however, 40% of Connecticut's FP/GPs<sup>7</sup> were over the age of 55 compared with 33% nationally.<sup>6</sup>

Between 1975 and 1992, the supply of all physicians in Connecticut and the United States increased by 72% and 66%, respectively (Figure 2). The US supply of FP/GPs increased at a slower pace (31%), in large part owing to a decline in the number of GPs.<sup>6</sup> In comparison, Connecticut's supply of FP/GPs decreased by 10% (54 physicians) over the same period.<sup>11</sup>

If the trends of 1975–1990 continue, the supply of Connecticut FP/GPs between 1992 and 2002 is projected to decrease by 42 physicians (9%, or, if the population size remains stable, from 16 to 15 FP/GPs per 100,000 civilian residents). Further, nine other states are also projected to experience a net loss of FP/GPs<sup>7,9</sup> (Table). In contrast, the overall national supply of FP/GPs is projected to rise by 6610 physicians (11% or from 24 to 28 FP/GPs per 100,000 civilian residents) over the same period.<sup>7</sup>



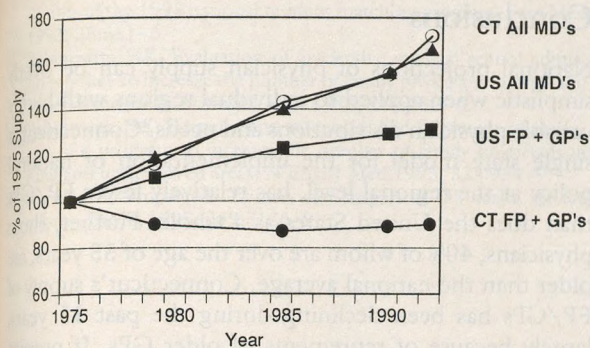


Figure 2. Supply of active nonfederal physicians in Connecticut (CT) and federal and nonfederal physicians in the United States (US) involved in direct patient care, 1975–1992. Connecticut data from Characteristics of Physicians: Connecticut<sup>10</sup>; US data from Roback et al (Table A-2).<sup>6</sup>

## Discussion

The decline in the number of FP/GPs in Connecticut and nine other states over the past two decades has been due primarily to the retirement of GPs outpacing new entries into practice. Continuation of the trend, however, is not inevitable. Predictions of future supply are based on current trends in residency outputs, migration patterns, and retirement rates, and, therefore, are valid only if those trends continue. Further, there are other, more difficult-to-quantify variables, such as country of origin, spousal issues, and the growth of managed care, that were not taken into account in this study. If any of these factors were to change in the future, the physician supply a decade from now might differ markedly from current forecasts.

Table. States with the Potential for Net Loss of Family Physicians and General Practitioners (FP/GPs) by the Year 2002

State	Projections, 1992–2002		
	FP/GP Resident Output*	FP/GP Retirements†	FP/GP Net Loss
Alaska	0	29	29
Connecticut	170	185	15
Florida	1070	1161	91
Hawaii	60	77	17
Maryland	250	282	32
Massachusetts	210	314	104
Mississippi	140	225	85
Montana	0	76	76
New Hampshire	0	75	75
Oregon	100	188	88

\*Projected output based on data from the American Medical Association's Directory of Graduate Medical Education Programs.<sup>9</sup>

†Projected retirements based on data from Roback et al<sup>6</sup>; assumes retirement by the age of 70 years.

Most predictions of physician supply suggest that the supply of FP/GPs and other primary care physicians will need to increase. Growing concern over health care costs and the growth of managed care with its attendant demand for primary care services may further strengthen the trend. Therefore, strategies for increasing the number of FP/GPs in undersupplied areas must be developed. Using Connecticut as a model, there are four basic alternatives:

1. *Train more FP/GPs.* Connecticut's three family practice residency programs graduate 17 new FPs each year, a small number compared with Connecticut's annual production of 185 internists.<sup>12</sup> The majority of internists, however, pursue careers in medical subspecialties. An annual increase of only five family practice graduates who remain in Connecticut would eliminate any potential decrease in FP/GPs over the next decade.

There are, however, a number of complicating factors that would need to be addressed before more FP/GP-trained graduates could be produced. Funding for additional positions would need to be obtained. If current proposals for changing Medicare graduate medical education reimbursement become a reality, additional federal funding might become available. Further, there may be growing institutional incentives to sponsor a residency program that is at least partially self-funding through patient care revenues. Additional faculty would be required, which might be difficult, given the current national shortage. Also, newly created FP residency positions would need to be filled. In 1993, only 77% of available positions were filled through the national match program in the spring, although 95% were filled by July 1 of that year.<sup>13</sup> Finally, there is a minimum of 3 years' lag time from when a residency position is created until the first new FP enters practice.

2. *Encourage more fully trained FP/GPs to move into Connecticut from out of state.* Given that the supply of FP/GPs in many states is growing rapidly, this may be a viable option. Governmental or institutional incentives might play a role. However, the current depressed economic climate in Connecticut might serve as a disincentive, as might potential competition in adult primary care from Connecticut's large number of internists.

3. *Promote the retention of current state FP/GPs and, in particular, graduates of state family practice residency programs.* Since 1976, the first year that family practice residencies in Connecticut produced graduates, overall in-state retention of residency graduates has been 41%. Retention rates by program vary widely, from 49% at Middlesex Hospital and 42% at the University of Connecticut to 23% at St Joseph's Hospital. If the overall state retention rate could be increased to 60%, the net decrease in state FP/GP supply over the next decade could be halved.



A multifaceted approach will be necessary to increase state retention rates. Hospital recruitment incentives could play a major role, although the federal antitrust ramifications of such programs have not yet been clearly defined. The development of strong family practice departments in an institutional atmosphere supportive of family practice will also be important. Perhaps most importantly, Connecticut medical students, particularly Connecticut natives, must be encouraged to pursue careers in family practice. Two recent studies have suggested that residents are more likely to establish their practice in a given location if they lived there or in a similar area before entering medical school.<sup>14,15</sup> Between 1982 and 1992, however, only 2.1% of Yale University graduates and 7.8% of University of Connecticut graduates entered family practice, for a combined average of eight graduates per year.<sup>7</sup> Therefore, there is an insufficient number of state graduates to fill even the 17 existing Connecticut first-year positions in family practice. Methods for encouraging state residents to enter family practice might include elimination of financial disincentives, such as medical school debt, provision of institutional and financial support for family practice, and increased efforts at providing effective, attractive curricula and role models in family practice.<sup>16,17</sup> There is currently strong institutional support for most of these concepts at the University of Connecticut, although not at Yale University.

4. *Retrain physicians who are currently practicing in other specialties in family practice or primary care.* The American Academy of Family Physicians supports such proposals,<sup>18</sup> and several pilot programs are in development.<sup>19</sup> However, for retraining to be a viable option, market pressures or a system of incentives must induce specialists to move to primary care. Although there is currently no apparent demand, Connecticut may be an area where retraining will become appealing, given the large total number of physicians relative to its population and the excess of internal medicine subspecialists, all of whom have generalist training.<sup>12</sup> The scope of primary care practice and the skills necessary for its provision must be clearly defined and retraining pathways developed to meet those objectives. Pathways include board recertification, the awarding of organizational or institutional certification of competency, and clinical apprenticeships.<sup>20</sup> Board certification, at least as it now exists, is likely to be the most time-consuming and least flexible, but it offers an established method for assessing competency. Certification of competency offers a more flexible response to learning needs but demands the development of validated methods for assessing clinical competency. Apprenticeship suffers from similar drawbacks, and standardization and supervision would be difficult.

## Conclusions

National projections of physician supply can be overly simplistic when applied to individual regions with highly variable physician distributions and needs. Connecticut, a single state model for the implementation of national policy at the regional level, has relatively fewer FP/GPs than does the United States as a whole. Further, those physicians, 40% of whom are over the age of 55 years, are older than the national average. Connecticut's supply of FP/GPs has been declining during the past 15 years, largely because of retirements of older GPs. If present trends continue, Connecticut will experience a net loss of 42 FP/GPs over the next decade, a 9% decrease in supply. Similar losses are also projected in nine other states, which, in the context of current and projected national shortages of primary care physicians, is probably undesirable. Such declines can be avoided if measures to increase state supplies of FPs are implemented soon.

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