

AMERICAN ACADEMY OF PEDIATRICS

Committee on Pediatric Workforce

Pediatric Workforce Statement

ABSTRACT. This statement reviews current physician workforce projections, and identifies the factors that will have the most impact on future pediatric workforce projections. It discusses the key issues relating to the pediatric workforce: utilization of services, provision of care by both pediatricians and nonpediatricians, pediatric subspecialization, ethnic composition of the population and of the pediatric workforce, indebtedness, and geographic distribution. In a concluding series of recommendations, the statement addresses the steps that must be taken to ensure that all of America's infants, children, adolescents, and young adults have access to appropriate pediatric health care.

ABBREVIATIONS. GMENAC, Graduate Medical Education National Advisory Committee; COGME, Council on Graduate Medical Education; AAP, American Academy of Pediatrics; IMG, international medical graduate; NRMP, National Resident Matching Program; PGY-1, postgraduate year 1; ABP, American Board of Pediatrics; GME, graduate medical education; AHC, academic health center; PNP, pediatric nurse practitioner; NAPNAP, National Association of Pediatric Nurse Associates and Practitioners; NP, nurse practitioner; PA, physician assistant; AAPA, American Academy of Physician Assistants; Meds/Peds, combined residency in internal medicine/pediatrics.

CONTEXT: THE TOTAL PHYSICIAN WORKFORCE

Developing accurate forecasts of the physician workforce is a difficult task. To understand physician workforce forecasting, one must appreciate that various analytic approaches are used, including demand-based forecasting (measuring productivity against actual demand for services), needs-based and adjusted needs-based forecasting (which estimate requirements at least partly on the basis of population morbidity rather than observed use of services), and the extrapolation method (based on managed care staffing patterns and cross-national comparisons of physician-to-population ratios). As analytic approaches vary between studies, so too do many measures and assumptions.

One of the seminal works in the area of physician workforce forecasting was a comprehensive workforce study undertaken by the Graduate Medical Education National Advisory Committee (GMENAC) and completed in 1980. Using an adjusted needs-based approach (ie, estimation of need for physician services based on projected population morbidity), GMENAC concluded that the aggregate US physician supply would, by 1990, exceed requirements by 70 000 physi-

cians, and that supply would exceed requirements by 145 000 in the year 2000.¹

In 1992, the Council on Graduate Medical Education (COGME) published a report that emphasized a growing shortage of practicing generalists (ie, general pediatricians, general internists, and family physicians) and called for an increase in the percentage of residents who complete training in the generalist specialties.² In 1995, COGME predicted a net oversupply of 105 000 physicians in the year 2000 (comprised of a surplus of 125 000 specialists and a modest shortage of 20 000 generalists).³

In 1993, Feil et al⁴ reviewed eight forecasts of physician supply and requirements undertaken or published during the 1980s and concluded that seven of the eight studies predicted an aggregate physician surplus by the year 2000. The size of the oversupply predicted in these studies ranged from <50 000 to >300 000. The single exception cited in the review by Feil and associates was a study by Schwartz et al,⁵ which predicted a supply nearly in balance with requirements. Feil et al aptly pointed out that the discrepancies in magnitude between existing studies largely stem from differing inputs or assumptions, that assumptions about requirements are especially ambiguous, and that even small differences in assumptions can result in large discrepancies over time.

A widely cited 1994 study by Weiner⁶ used extrapolation from managed care organizations' staffing patterns. The key assumptions of this work were that all Americans would be insured by the year 2000, and that 40% to 65% of Americans would be enrolled in managed care plans. Based on these assumptions, Weiner concluded that in the year 2000 there would be an aggregate surplus of approximately 165 000 physicians (representing 30% of patient care physicians), with virtually all of this surplus consisting of specialists (supply and requirements of generalists being in relative balance). Weiner noted that, despite his use of an entirely different forecasting approach from GMENAC, his projection was remarkably similar to that of the earlier study.⁶ The most optimistic of the recent forecasts has been that by Cooper⁷ who projected a surplus of only 31 000 physicians (5% of patient care physicians) in the year 2000. Cooper's projections were built on assumptions of population projections, health maintenance organizations' staffing patterns, geographic distribution of physicians, and physician productivity that diverge from those used by other authors. On the other hand, recent cross-national comparisons have suggested that the supply of generalist physicians in the United States is

The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

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currently adequate, and that efforts to expand the generalist workforce significantly are ill-conceived.⁸

PEDIATRIC WORKFORCE

Based on estimates of growth of the number of pediatricians, GMENAC predicted an excess of 7500 general pediatricians by 1990, growing to a greater surplus by the year 2000.¹ The American Academy of Pediatrics (AAP) studied the report and issued a response in 1981 that questioned many elements in the model.⁹ Concerned, however, that an excess number of pediatricians would be produced by the 1990s, the Academy published a statement in 1985, which it later revised in 1987, recommending government and academic policies that would ensure the production of fewer pediatricians, and at the same time, ensure production of pediatricians of the highest quality.¹⁰

Subsequent to the 1987 statement, some evidence pointed to shortages of pediatricians, rather than the projected surplus, in many regions of the country. This view continued to be reflected in Academy workforce policy statements. In 1993, it was noted that, although the absolute number of physicians caring for children was increasing, significant unmet health needs in the pediatric population existed. The Academy called for the support of recruitment efforts to increase the number of pediatricians and to encourage medical students of the highest caliber to select pediatrics as a career.¹¹

Throughout the early 1990s, a number of studies and reports were promulgated that had important implications for pediatrics. A 1990 survey of residency program directors provided the strongest empirical evidence to date that the supply of new pediatricians did not significantly exceed the demand.¹² More recent data from a study of medical journal recruitment advertisements for pediatricians indicate that the number of positions advertised for general pediatricians peaked in 1990, and has steadily declined since then. For pediatric subspecialists, the number of positions advertised remained steady.¹³

In 1990, COGME contracted with the consulting firm of Abt Associates, Incorporated to reexamine the adequacy of physician workforce supply. The resulting report, commonly referred to as the Abt report, concluded that there would be an even greater oversupply of pediatricians than the projections outlined in the 1980 GMENAC report.¹⁴ The Academy's concerns with this report's methodology and conclusions were strongly voiced to the COGME and in the literature.^{15,16}

The Academy, along with other members of the pediatric community, is currently participating in the Future of Pediatric Education II Project. This is a multifaceted effort that seeks to address the health care needs of children and the workforce necessary to meet those needs in the next millennium. A final report from the Future of Pediatric Education II Project, with conclusions and recommendations, is expected in mid-1999. The Academy anticipates that the findings in this report will have far-reaching implications for the specialty of pediatrics and the development of future policy positions pertinent to

both the pediatric workforce and the lifelong pediatric education process.

The Academy believes that it is important to support efforts to assure that adequate, but not excessive, numbers of well-trained pediatricians enter the labor market in accordance with the needs and numbers of US children. Given that the studies referenced above concur that the supply of physicians overall either has or will soon reach a surplus, it is likely that all specialties, including those in primary care, will be called on by policymakers, both within the federal government, as well as within the medical community, to consider carefully the reduction of training capacity. The Academy has, therefore, supported the establishment of an independent, national health care workforce commission or policy body with regulatory authority, which would be insulated from the political process and have broad representation from the primary care community, including pediatrics. Among its several charges, the policy body would be called on to project the aggregate need for the medical care workforce for the health care delivery system; to determine the necessary number of residency positions on a national basis (including the number of international medical graduates [IMGs]), while maintaining the appropriate number of generalists and subspecialists; to allocate residency positions by specialty and subspecialty; to implement appropriate incentives to reinforce the selection of primary care; and, finally, to conduct ongoing research that will ensure the availability of appropriate data on which to base workforce decisions.¹⁷

The underpinning of these workforce considerations and decisions must be the acquisition of reliable data and the development of realistic, scientifically sound workforce models for both primary and subspecialty pediatric care. The Academy recognizes that insurance reform and market forces (including the influence of managed care organizations and the provision of care delivered by nonpediatricians, such as family practice physicians and nurse practitioners) make it virtually impossible to state with precision the workforce requirements for pediatricians. Notwithstanding the uncertainties involved in workforce forecasting and the conflicting prior assessments, it is appropriate that the Academy issue a current statement on pediatric workforce and recommend which steps must be taken to ensure that all of America's infants, children, adolescents, and young adults have access to appropriate pediatric health care.

Trends in Pediatric Workforce Supply

According to the most recent data collected by the American Medical Association, in 1996 there were 53 369 self-designated active pediatricians (both board-certified and non-board-certified) in the United States. The main professional activity of approximately 93% of these pediatricians was the provision of patient care in office- and hospital-based settings. The remainder were engaged in other professional activities, such as administration, medical teaching, or research.¹⁸ The total number of active pediatricians represents a slightly >30% increase

from the 40 893 pediatricians accounted for in 1990. From 1970 to 1996, the total number of US physicians more than doubled. The largest percentage increase in the primary care specialties was in family practice (411.4%), followed by pediatrics (191.1%). Between 1980 and 1996, the pediatric population (0–20 years old) increased by 5.4%.^{18,19}

In 1996, 25% of all pediatricians were younger than 35 years of age, and another 33% were between the ages of 35 and 44 years, which makes pediatricians, on average, younger than other physicians.¹⁸ The implication of this age structure on the current pediatric workforce is that retirement would not be expected to affect the workforce significantly until 2015 to 2025, when large numbers of pediatricians reach the age of 65 years.

A noteworthy trend in both the overall physician workforce, and specifically, in the pediatric workforce, is the growing number of women physicians. Between 1970 and 1996, the total number of women in medicine increased over fivefold. Since 1970, pediatrics has been on the leading edge of the percentage increase of women in medicine. In 1996, 24 271, or nearly 45%, of all pediatricians in practice, were women, compared with approximately 25% of physicians in internal medicine and 21% of all physicians.¹⁸

With the significant increase in the number of women in pediatrics, and with the increase of dual-career marriages, lifestyle and childrearing considerations greatly influence employment decisions of both women and men. Unpublished data from the AAP Department of Research (1994) indicate that female pediatricians in direct patient care work 82.8% as many hours per week (46.5 vs 56.1) and see 76.5% as many patients (82.9 vs 108.4 per week) as male pediatricians. In light of the fact that 62.4% of current pediatric residents are women,²⁰ this may be pertinent to productivity considerations in the future. On the other hand, other data have suggested that there are no significant differences in productivity among primary care physicians when measures appropriate to managed care are used.²¹ It is very difficult to predict the effect of increasing the numbers of women practicing pediatrics during a period in which many variables are changing simultaneously. These variables include: the elusive definition of a “full-time equivalent”, the numbers of women in training, the average age of the women practicing pediatrics, and growth in managed care irrespective of gender issues.²² The COGME concluded that “calculations based on current knowledge of practice patterns and trends in the gender balance in the workforce suggest that effects of gender-based adjustments are minimal.”²³ It is possible, but unproven, that given the very large percentage of women pediatricians entering the workforce, the implications of gender-based differences in productivity may be greater for pediatrics than for other specialties.

The number of IMGs in pediatrics has grown by >300% between 1970 and 1996.¹⁸ In 1996, IMGs comprised nearly 29% of the pediatrician workforce, compared with 23% of the total physician workforce.

The immigration status of IMGs, along with fluctuations in the US birth rate, variations in practice patterns, and market changes (discussed in following sections), are four factors that are likely to have the most impact on future pediatric workforce projections.

Pediatric Training

During the 1980s, interest in primary care specialties declined among US medical students. Unlike the other primary care specialties, however, pediatrics did not experience a significant decline during this period in the percentage of US medical students choosing pediatric residency programs,²⁴ in part because of the large number of women selecting pediatric residencies. More recently, US medical school graduates have shown increasing interest in generalist training, including training in joint programs, such as internal medicine/pediatrics, an area in which the numbers of programs and positions offered have increased significantly.²⁵

Between 1988 and 1993, approximately 10% of US medical school graduates participating in the National Resident Matching Program (NRMP) chose pediatrics.²⁴ This percentage increased slightly between 1994 and 1996. In 1998, 11.9% of matching US medical school graduates (1766) filled 80.4% of the pediatric postgraduate year 1 (PGY-1) positions (2196) offered through the NRMP.²⁵ The IMGs filled 16.1% of the positions offered through the NRMP, which also reports that 6.3% of the pediatric PGY-1 offered were filled by “others” (which, according to the NRMP, includes Canadian, osteopathic, fifth pathway, and US physicians), while 1.1% of pediatric positions remained unfilled.²⁵ A significant number of additional pediatric positions are usually filled outside of the “match,” largely by IMGs. These positions filled outside the match, along with several other factors used in counting residents, account for discrepancies between the number of residents reported by the NRMP and data from residency training directors and the American Board of Pediatrics (ABP).

Currently, there are 215 accredited pediatric training programs in the United States. According to the ABP, approximately 7644 pediatricians were in residency training in 1997, a 14% increase from the 6731 residents reported in 1991. Of pediatric residents in 1997, 64% were women, while 25% were IMGs.²⁶

Current immigration policy makes it difficult to predict the number of IMGs in training who will be able to enter the pediatric workforce. The number and types of visa categories available to IMGs have become more complex in recent years. Some categories require the physicians to return to their countries of origin after training is completed, while others provide for extensions of the visa if, upon completion of training, the IMG agrees to practice in a designated medically underserved area. Other exceptions under US immigration policies are sometimes granted, thereby allowing additional extensions under various circumstances. In 1996, slightly >36% of all IMGs were “exchange visitors” and were not expected to remain in the US. Thus, the number

of IMG pediatricians entering practice after training in the US, based on IMG visa status, can be expected to be modestly smaller than the number of IMGs counted at the time of entry into pediatric graduate medical education (GME) programs.²⁰ Many proposals have been put forward in an effort to reduce the production of physicians in the US by reducing the available number of GME positions. The Academy endorses reducing first year GME positions in number to correspond more closely to the number of US medical school graduates.

The financing of GME stands as the tool for reshaping the future supply of physicians. Residency programs are federally supported at two levels: direct medical education support, based on the number of residents and per resident costs, and indirect medical education support, which adjusts Medicare payments in recognition of higher costs of patient care in teaching institutions. Additional primary care training grants are provided through the health professions training programs found in Title VII of the Public Health Service Act. Title VII provides the principal federal support designated for primary care training in diverse ambulatory settings. Title VII funds for departments of pediatrics have been instrumental in the expansion of services, the development of new programs, and training physicians who have remained general pediatricians in inner-city underserved communities. The Academy maintains that reauthorization and expansion in funding for Title VII is crucial. Furthermore, the Academy believes it is critical to insist on the inclusion of pediatrics and pediatric training programs in all primary care incentive programs.²⁷

Attempts are underway from many vantage points to implement changes in the financing of Medicare GME to reduce the numbers of IMGs in training programs.²⁸ The future structure of GME financing will have profound implications for pediatrics. The Academy will continue to support changes in GME financing, which favor the training of primary care physicians, including pediatricians, at levels adequate to meet target requirements. The Academy endorses reforms that would entail an all payer system to cover GME costs, and which would provide payments directly to GME programs, thereby enhancing ambulatory training. The Academy cautions, however, that the quality of primary care residency training may be jeopardized soon, given current trends, which are reducing numbers of patients seen by trainees in academic health centers. Consequently, GME reform will need to address the unique financial circumstances of the GME programs at academic health centers (AHCs) and children's teaching hospitals. The funding mechanisms must enable AHCs to develop and administer programs to educate pediatricians in community settings where the AHC may not be the recipient of payment for patient care.

The Academy has determined that the following factors are key issues that must be considered when developing pediatric workforce policy: utilization of services, provision of care by nonpediatricians (such as nurse practitioners and family physicians), pedi-

atric subspecialization, ethnic composition of the population and of the pediatric workforce, indebtedness, and geographic distribution.

KEY FACTORS INFLUENCING PEDIATRIC WORKFORCE

Utilization

Some evidence has revealed a growing demand for pediatricians. Pediatric residency program directors reported a 96% placement rate for program graduates in 1990, a year widely predicted to be one of "pediatrician glut."¹² In a 1993–1994 survey of residency directors, only 2% of individuals completing pediatric residency training were reported to have experienced difficulty finding a suitable position. However, these authors also reported that 11.4% of program directors anticipated employment problems for their 1994–1995 cohort of senior residents, while 12.1% of directors indicated the possibility of reductions in numbers of positions during the next 3 years.²⁹ Projections of demand for pediatricians in the future are problematic. For example, the US Census Bureau predicted that there would be 3.7 million live births in 1990, whereas the actual number of live births was 4.2 million.^{19,30} The Bureau also predicted that by the year 2000 there would be 66 million children <18 years old, a forecast that has now been called into question.¹⁹ Fluctuations in the pediatric population have a great impact on workforce needs and must be factored into workforce models.

Trends indicate that utilization of pediatricians has increased in recent years. For instance, data from the National Ambulatory Medical Care Survey reveal that of the 13 largest specialties, pediatrics was the only specialty showing a significant growth in percentage of all office visits between 1985 and 1989, from 11.4% to 12.6%.³¹ During the 12-month period from January 1996 through December 1996, visits to pediatricians accounted for 96.8 million of the 734.5 million ambulatory care office visits made to physicians in the United States, again, representing 13.2% of all office visits.³² Possible explanations for increased visits to pediatricians include the expansion in the number of children enrolled in Medicaid and managed health care plans, both of which generally cover ambulatory care services more than traditional indemnity plans, as well as a reduction in the number of office visits to nonpediatricians.

Another explanation for the increase in visits to pediatricians is the fact that pediatricians are more frequently providing health services to all children, especially adolescents from 14 to 21 years of age.³³ According to AAP policy, the scope of pediatrics includes infants, children, adolescents, and young adults. In many settings (eg, college health centers, centers for treatment of chronic illness), pediatricians actively participate in the care of young adults beyond the age of 21 years. Successfully addressing the special and unique needs of adolescents will continue to affect pediatric workforce needs, as only 24% of adolescent care is now delivered by pediatricians.³³

The Academy believes that the *need* for pediatricians has increased and will continue to expand, attributable in part to the growth and recognition of morbidities, such as, acquired immunodeficiency syndrome, behavioral and learning problems, divorce, child abuse, violence, homelessness, and the abuse of tobacco, alcohol, and other substances. Additional factors that will influence the need for pediatricians include the impact of welfare reform; the relative lack of pediatricians practicing in low-income urban and rural communities; the continued underrepresentation of minority pediatricians in the workforce; and the changing number of children who are either uninsured or underinsured and the consequent changes in utilization that will occur. The impact of these issues on market *demand* for pediatricians' services is unclear. The Academy believes these issues warrant immediate and ongoing attention, and that the development of accurate physician workforce models must take these issues into account.

Allied Health Professionals

Workforce models have assumed that pediatric nurse practitioners (PNPs) could deliver up to 33% of child health services.¹⁴ According to a letter from Cathie Burns, PhD, RN, CPNP, in October 1997, unpublished data from the most recent membership survey (1997) of the National Association of Pediatric Nurse Associates and Practitioners (NAPNAP) reveal that approximately 10 000 PNPs are now actively practicing in the United States. An estimated 600 new PNPs applied to enter the workforce in 1996. The 1992 NAPNAP membership survey demonstrated that one third of PNPs practice in hospital clinics, while 23% are in private practice settings. Community and public health settings accounted for another 13% of PNP practice patterns. The remaining 30% of PNPs were in a wide variety of settings including schools and health maintenance settings.³⁴ Unpublished data from the previously identified 1997 NAPNAP membership survey also indicates that during the past 5 years, PNPs in hospitals and hospital-based clinics decreased to approximately 25%, while PNPs in office practice (employee) increased to just over 38%. PNPs in community and public health settings increased modestly to slightly over 16%. Although PNPs undergo shorter training than pediatricians, their collaborative relationships with pediatricians seem to compensate for possible deficiencies in their background with regard to caring for children with subtle or complex medical problems.

Other allied health professionals include physician assistants (PAs) whose numbers have also increased dramatically over the last few years. As of November 1996, there were 71 accredited PA programs and 14 programs with provisional accreditation expected to graduate 2528 PAs per year. The American Academy of Physician Assistants (AAPA) estimates that by the beginning of 1997, there were approximately 28 828 PAs in clinical practice. Approximately 4% of AAPA members work in general pediatrics or a pediatric subspecialty.³⁵ According to a 1996 survey of

AAPA members and nonmembers, approximately half of the respondents practice in a primary care specialty, while 40% of PAs practice with physicians in family medicine, where they are, therefore, likely to see pediatric patients. Slightly over 8% practice in internal medicine, and almost 3% practice in general pediatrics. In addition, the remaining 56% not now practicing in pediatrics or family medicine may, however, work in pediatrics or family medicine at some future time, because many PAs change specialties over the course of their careers.³⁶

Studies comparing either nurse practitioners (NPs) or PAs to physicians have evaluated only their respective care of adult patients. The PAs worked more efficiently, seeing more patients and generating higher gross revenue than NPs.³⁷ Both PAs and NPs directly reflect, in their productivity, the levels of physician task delegation.

The cost of care by PNPs or PAs compared with pediatricians is difficult to analyze, as no studies examine independent practice. There is, hence, a pressing need for data on this subject. One may expect that, based on the reduced training time and lower salaries, PNPs and PAs are likely to become increasingly employed in the provision of child health services. Although PNPs are frequently suggested as lower cost replacements or substitutes for pediatricians, they may represent a comparable rather than a lower cost option, because of increasing PNP salaries, limited working hours, fewer patients seen per hour on average than physicians, and the need for physician supervision to assure an appropriate standard of quality.

Concerns have been raised regarding the impact of provider type on the health status of all children, and particularly children from underserved groups, such as the poor. In general, PNPs function with assigned protocols, and are neither trained nor expected to develop differential diagnoses and treatment plans. These differences in training may have clinical relevance and result in divergent tiers of care, as some children may disproportionately depend on PNPs and other nonphysician providers (such as PAs, nurses, etc).

The need for collaboration between the pediatric medical community and the allied health professional community is well-recognized. For this reason, and because of the aforementioned concerns, the Academy acknowledges the importance of developing qualitative, outcomes- and process-based comparisons between pediatric care delivered by both pediatricians and nonpediatricians. Most importantly, the Academy believes that all children should receive care that is equal in quality, and that differential tiers of care should not be tolerated.

Family Practitioners

In the past, physician workforce studies have estimated that about 15% to 25% of services to children are delivered by family practitioners; but in rural areas this percentage may be higher.^{14,38} However, pediatricians continue to treat the largest percentage of children in the infant and preschool age groups.³¹ Whereas a significant number of older children and

adolescents received care from family practitioners in the past, pediatricians are increasingly being consulted and recognized as the primary health care experts for these age groups as well.³³

Internal Medicine/Pediatrics

Of the new residency programs, one of the fastest growing is the combined residency in internal medicine/pediatrics (Med/Peds). This 4-year program, which prepares residents for Board eligibility in both specialties, offered 456 PGY-1 positions in 106 programs in 1998, 82% of which were filled by US graduates.²⁵ Since 1988, there has been a >135% increase in residents entering these positions through the "match." The practice patterns of these programs' graduates are not well-studied; however, the ABP has just completed a survey to determine their practice characteristics.³⁹ Med/Peds residencies require 4 full years of training as a prerequisite to double board certification; yet, attempts to secure full GME funding for all 4 years of Med/Peds training have been contentious.

Pediatric Subspecialization

Pediatrics has shared in the increase in knowledge and technology available for diagnosis and patient management, much of which requires subspecialty training. There are currently 12 areas of pediatric subspecialization for which there are ABP certification examinations: adolescent medicine, cardiology, critical care medicine, emergency medicine, endocrinology, gastroenterology, hematology/oncology, infectious disease, neonatology/perinatology, nephrology, pulmonology, and rheumatology. Certification of added qualifications is also provided in sports medicine and medicine/toxicology.²⁶ Allergy/immunology, however, is an independently boarded specialty. Some pediatric subspecialty training (such as general ambulatory, adolescent, and developmental pediatrics) is often undertaken to enhance the pediatrician's ability to provide optimal primary care services. In the past, many pediatricians took 1 or 2 years of subspecialty training before entering primary care practice. Current trends indicate that many pediatricians subspecialize in highly technical areas and care for children with specific complex diseases. The expected life span for children with many chronic conditions is lengthening, thereby increasing the need for pediatric subspecialty care. The Academy believes that all children with complex diseases should have a well-trained primary care pediatrician, as well as available and appropriate consultations with pediatric subspecialists.⁴⁰

A 1991 survey by the Academy found that 34% of all practicing pediatricians in the United States have had some subspecialty training. Of these, 28% were neonatologists, 12% were in hematology/oncology, and 11% were in cardiology.⁴¹ In addition, IMGs currently make up 49% of subspecialty fellows.²⁶

Not surprisingly, for the pediatric subspecialists who are certified in their field, only 59% of their time was spent in direct patient care. The remainder of their time was spent in administration, research, and teaching, as 60% of all pediatric subspecialists practice in AHCs, compared with <33% of internal med-

icine subspecialists.⁴² Because the relative and absolute amounts of time pediatric subspecialists devote to clinical responsibilities vary greatly, the definition of a pediatric subspecialist (clinical) full-time equivalent is elusive, thus making workforce projections difficult for this group.

To some extent, the prevalence of practice opportunities in academic medicine has been beneficial to pediatric subspecialists. Fewer pediatric subspecialists have had difficulties finding employment compared with internal medicine subspecialists. As many as 10% of internal medicine subspecialists are currently having difficulty finding positions.⁴²

AHCs are facing an uncertain future. In a recent study involving members of the Association of Academic Health Centers, all of the centers were placing less emphasis on their teaching and research functions, while plans were being made for expansion in primary care services and vigorous cost-cutting.⁴³ It is well-known that health maintenance organizations are moving in the direction of increasing the scope of practice of generalist physicians and decreasing referrals to specialists, and particularly, to subspecialists.

In response to these market forces, both the number of fellowship positions and the number of applicants may decline in the coming years. Cutbacks are beginning to be made by GME programs, especially in fellowships that lack board certification status. The ABP reports that fewer residents taking the General Pediatrics Examination in 1996, only 22%, plan to subspecialize, marking a decline from 27% in 1995, and 32% in 1985.^{26,44}

Although there does not seem to be a large oversupply of pediatric subspecialists at present, some definite trends are evident. Both the size and number of subspecialty programs can reasonably be expected to decrease. Those who enter these programs will need to be educated in the needs and priorities of managed care organizations. Research may well be proprietary research, performed for pharmaceutical companies as a source of income; and teaching may well include, not only education of residents in AHCs, but also contractual outreach education for pediatric practitioners who work in a wide variety of community practice settings.⁴³

Ethnic Composition

Except for physicians of Asian-American background, minorities are underrepresented in all specialties including pediatrics. According to unpublished data from a 1994 survey of young pediatricians (conducted by the AAP Department of Research), 5% are black; 0.1% are American Indian or Alaskan Native; 12.7% are Asian or Pacific Islander; and 80.6% are white. More specifically, nearly 12% of young pediatricians are Hispanic, while the number of black pediatric residents has fluctuated over the past 15 years. Overall, there has been an increase between 1981 and 1996 (from 390 to 432),^{20,45} but the growth remains slow and the total numbers low.

The widening disparity in the health status between nonminority children and minority children has received considerable attention during the past

few years. Many of the US Public Health Service's *Healthy People 2000 Objectives* are intended to address the high concentration of disease and disability among racial and ethnic minority populations.⁴⁶ In 1994, the Academy published the *Report of the AAP Task Force on Minority Children's Access to Pediatric Care*, which speaks to need for expanding access to pediatric care for minority children, and greater diversity within the pediatrician population. The report also calls for training in the delivery of culturally effective health care for nonminority medical students, resident physicians, and pediatricians in practice.⁴⁷

The proportion of the population represented by minority children is increasing. These children are known to have poorer health status and diminished access to health care, independent of other factors.⁴⁸ Evidence supports the conclusion that increasing the numbers of minority pediatricians will address this problem. Minority pediatricians disproportionately serve minority children and children in underserved areas. In addition, minority physicians are more likely to be sensitive to the culture of their minority patients, thereby having the potential to deliver health care services more effectively.⁴⁹⁻⁵¹ Furthermore, minority pediatricians have a unique opportunity to serve as role models by influencing children and adolescents to pursue careers in medicine.

To increase the number of minority pediatricians, the Academy therefore supports the following efforts:

- encouraging more minorities at appropriate educational levels to pursue the study of the sciences in preparation for careers in medicine;
- increasing the number of minorities enrolled in and graduating from mainland US and Puerto Rican medical schools;
- increasing the number of minority medical students choosing pediatrics as a career; and
- increasing the racial and ethnic diversity of medical school faculty.⁴⁷

The Academy believes, moreover, that barriers, such as medical student indebtedness, which is significantly higher for minority medical students,⁵² must receive immediate attention. Affirmative action programs in medical school admissions policies have increased the number of minorities enrolled, and should continue.⁴⁷ The AAP supports the position that more minority pediatricians will not provide the sole solution to solve the problem of lack of access to care for minority children; however, more caring, concerned pediatricians, who are involved in primary care, and who are actively engaged in providing health care for minority infants and children, can enhance the health status of minorities.⁵¹

Indebtedness

Several studies examining the impact of indebtedness on medical students' choice of specialty have produced conflicting results.^{53,54} However, studies have identified indebtedness and income potential as important issues to medical students in specialty

selection.^{52,55} According to recent surveys of residents conducted by the Association of American Medical Colleges, >80% of the respondents were in debt, which, on average, amounted to >\$69 000.⁵⁶ Of particular note is the large and increasing percentage of medical school graduates with high levels of indebtedness. For example, in 1996 the Association of American Medical Colleges reported that an accumulated debt of >\$75 000 was reported by 33.2% of all medical school graduates and by 47.1% of graduates of private US medical schools.⁵⁶

The Academy is concerned with the disproportionate impact that indebtedness may have on efforts to increase the number of minorities in medicine, and on these doctors' choice of specialty and practice.⁴⁷ Addressing the complex issue of medical student indebtedness through loan repayment/forgiveness programs is one avenue endorsed by the Academy in the effort to maintain and enhance pediatrics' diversity and ability to attract medical students of the highest caliber into the specialty.

Geographic Distribution of Pediatricians

The variability in the geographic distribution of general pediatricians needs to be factored into any analysis of pediatric workforce. Although the total number of pediatricians has been steadily increasing, a shortage of pediatricians remains in rural areas, remote rural or "frontier" areas, and impoverished urban areas. There remain a small number of difficult-to-fill positions within the Indian Health Service, although recent years have witnessed better "fill rates" overall for these positions. Better data regarding the current distribution of pediatricians (especially in underserved areas) and the factors that influence geographic distribution of pediatricians are needed.

There appear to be several barriers that must be overcome to encourage the location of pediatric practices in underserved areas. The most obvious is financial viability with respect to the often limited child population in rural areas, and to the large uninsured or Medicaid-insured populations in both rural and urban underserved areas. Other factors serve as disincentives, such as lifestyle considerations (including social, cultural, and educational opportunities), the availability of medical resources (eg, location of hospital facilities, access to continuing medical education, coverage respite, proximity of medical colleagues), and career opportunities for spouses.

The Academy supports financial incentives at both the state and national levels to attract and retain pediatricians in underserved areas. This should be a multifaceted approach that considers issues, such as expansion of the National Health Service Corps, greater awareness and utilization of the programs available through the Indian Health Service, other loan forgiveness programs, financial incentives and reimbursement differentials in Medicaid, and other publicly financed care.

Teaching sites should encourage career choices in primary care so that trainees witness the pediatric role modeling, care for the more common problems

of pediatric patients, and better understand the relationship between the training program, the pediatrician, and the community. Training of residents and students in outpatient sites and private offices will continue to expand as residency and medical school curricula increasingly emphasize ambulatory medicine. Although not a significant factor at this time, these changes may influence pediatrician requirements in terms of the numbers and types of practitioners, as practicing pediatricians add more teaching responsibilities to their daily activities. Also, funding for training programs will need to factor in appropriate reimbursement for the practicing pediatricians' time spent in teaching.

CONCLUSIONS

The Academy maintains that pediatricians are the optimal health professionals to provide care for infants, children, adolescents and young adults.⁴⁰ Insurance reform and market forces (including the influence of managed care organizations and the provision of care delivered by nonpediatricians, such as family physicians and NPs) make it difficult to state with precision the workforce requirements for pediatricians. Although the absolute number of physicians caring for children is increasing; and although the numbers of pediatricians per 100 000 US children is increasing and projected to increase further, significant unmet health needs in the pediatric population continue to exist. Thus, defining with precision the appropriate number of pediatricians is a virtually impossible task.

In the aggregate, the current pediatric workforce appears adequate to meet the health needs of US children, yet its rate of growth substantially outpaces the current and projected growth in the US child population, as market forces shape health care delivery in an ongoing way. To meet the health needs of children into the next century more completely, improved geographic distribution of pediatricians and an increase in representation of underrepresented minority groups in pediatrics will need to occur. Most importantly, with respect to children's access to pediatric care, expanded health insurance is imperative. This has far greater potential to solve access problems for underserved children than does increasing physician supply. Thus, the Academy supports three recommendations for action and suggests that they be implemented in the following ways:

PEDIATRIC WORKFORCE RECOMMENDATIONS

Recommendation One

Support the continued education and training of appropriate numbers of well-trained pediatricians in accordance with the needs of America's children.

Implementation Strategies

1. Encourage medical school admissions committees to select students with an interest in primary care and the health and welfare of children.
2. Support recruitment efforts to encourage medical students of the highest caliber to select pediatrics as a career.

3. Explore reimbursement differentials in Medicaid and other publicly financed care to pay higher rates for services delivered in identified underserved areas.
4. Explore the creative use of tax credits and other means as financial incentives to physicians for providing care in identified underserved areas.
5. Support efforts to increase the enrollment of minority students in medical school.
6. Encourage specific recruitment of underrepresented minority students into pediatrics according to current estimates of the population of children and pediatricians in the United States:
 - encouraging more minorities at appropriate educational levels to pursue the study of the sciences in preparation for careers in medicine
 - increasing the number of minorities enrolled in and graduating from mainland US and Puerto Rican medical schools
 - increasing the number of minority medical students choosing pediatrics as a career
 - increasing the racial and ethnic diversity of medical school faculty.
7. Support the continuation and expansion of primary care training, such as the Title VII programs.
8. Insist on the inclusion of pediatrics and pediatric training programs in all primary care incentive programs at the local, state, and federal level. Ensure that policymakers recognize pediatrics as a primary care specialty and include pediatricians in all legal definitions of primary care providers.
9. Support the restructuring of student loan repayment schedules so they are based on a percentage of earnings, rather than on fixed payments.
10. Support changes in GME financing that favor the training of primary care physicians, including pediatricians, at levels adequate to meet agreed upon target requirements.
11. Support GME reforms that entail an all-payer system to support GME costs, and that will provide payments directly to GME programs, thereby enhancing ambulatory training.
12. Support the provision of appropriate funding and teaching resources for community pediatricians who agree to train medical students, pediatric interns, and residents in their office practices.
13. Endorse the stance that first-year GME positions be reduced in number to more closely correspond to the number of US medical school graduates.
14. Support reform efforts to assure that reduced, but adequate, numbers of well-trained pediatricians enter the labor market in accordance with the needs and numbers of American children.

Recommendation Two

Seek the remediation of geographic maldistribution that has resulted in an undersupply of pediatricians in rural and inner-city areas.

15. Support further research on geographic distribution of pediatricians (eg, trends in employment patterns, efficacy of incentive programs, regional and community level geographic distribution analysis, etc).
16. Support creative student loan forgiveness programs for physicians practicing in designated underserved areas.
17. Explore alternative methods to: a) provide child health services by pediatricians in the event GME reform leads to cutbacks in residency positions in urban hospitals and children's hospitals; and b) ensure the stability of these institutions.
18. Support the expansion of the National Health Service Corps to increase opportunities for pediatricians where market forces do not facilitate private pediatric practice.
19. To improve access to care for infants, children, adolescents and young adults, some form of health insurance for the uninsured must be established.

Recommendation Three

Support national workforce planning efforts.

Implementation Strategies

20. Continue to provide accurate, timely information to COGME, congressional subcommittees, and other governmental and nongovernmental entities.
21. Support the development of realistic, scientifically sound workforce models for both primary and subspecialty pediatric care.
22. Support the consideration of developing a sound, independent, national physician workforce planning body that has the authority to allocate GME positions based upon the best available information.
23. Continue monitoring pediatric workforce issues by following the significant changes occurring in the delivery and financing of health care.

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