PHYSICIAN ASSISTANTS IN THE HEALTH WORKFORCE 1994

Final Report of the
Advisory Group on Physician Assistants and the Workforce
submitted to:
Council on Graduate Medical Education (COGME)

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Public Health Service
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Executive Summary

After a period where health workforce planning activities often failed to include the contributions of new categories of health care professionals, the prospect of health system reform has once again focused national policy attention on workforce issues. Changes related to the educational preparation, training support, practice costs, specialty distribution, and geographic distribution of health professionals are on the horizon. Among the health care professions, physician assistants (PAs) are receiving increasing interest regarding their clinical roles and service contributions to health delivery. With the aim of providing Congress and health policy makers needed updated information on PA activities in the workforce, and to provide policy guidance and recommendations on PAs, the Council on Graduate Medical Education (COGME) commissioned the Advisory Group on Physician Assistants and the Workforce (AGPAW). The Council charged AGPAW to examine the current status and practice activities of the nation's 23,350 actively practicing PAs, and to determine their present contributions to medical services delivery in primary care and other clinical practice areas.

Health care system reform proposals presently under consideration include specific measures designed to address and redress long standing workforce problems. These include the physician generalist-specialist imbalance, the maldistribution of providers by geographic region/medical shortage area, the underutilization of nonphysician health providers such as PAs and nurse practitioners, and obstacles to achieving optimal provider mix and efficiency in care delivery. Over the past three decades, PAs have earned a reputation as respected members of the health care team.

The experience in utilization of PAs in medical practice with primary care and specialty physicians has shown positive results in terms of clinical productivity, quality of care, cost effectiveness, patient acceptance, and clinical outcomes and safety. AGPAW's findings and recommendations center on the future supply of and demand for PA services, and the implications of PA utilization on physician workforce requirements in primary care. AGPAW presents findings on the present status of the nation's 59 accredited PA educational programs, reviews the adequacy of PA program support, and provides estimates of the capacities of PA programs to increase annual graduate output under various health reform scenarios.

Demand for physician assistants in the health personnel market place exceeds the present supply of these providers, and increased requirements for PAs are anticipated, particularly under health care reform. A model to estimate future workforce demand for PA services in several sectors of the health system indicates that, with certain assumptions, as many as 55,000 to 60,000 total PAs may be required. Current health care reform measures aim to increase the supply of primary care providers, and it is likely that this goal will include an increase in the number of PAs. More PAs will be required in roles as primary care providers and to augment medical staffing needs in emerging health care delivery systems, i.e., HMOs and managed care organizations, as well as by private solo group practices and in other ambulatory care settings.

PAs are prepared for roles as primary care providers, yet they have displayed an impressive degree of clinical versatility. PA generalist education permits them to assume primary care and medical generalist roles, but also prepares them to practice in multiple in inpatient care settings, clinical specialty and subspecialty practices. In fact, 55% of all practicing PAs are in specialties with 45% in the primary care specialties of family practice, general internal medicine, and general pediatrics; nearly a third of PAs are employed in hospital settings, most of them in either "PA house staff" roles or subspecialty positions.

After examining medical marketplace forces and reform changes most likely to influence the future demand for PAs, the Workgroup has determined that there will continue to be a steady demand for PAs to serve in primary care roles in a variety of

ambulatory settings. It is also apparent that demand will also rise for PAs to serve in hospital positions due to anticipated "downsizing" of graduate medical education (GME) programs. Increased utilization of PAs is anticipated to help meet clinical service needs in teaching hospitals. Assuming a loss of 11,000 residency positions, it is projected that, considering only needs in the GME sector, there would be a requirement for an additional 3400 PAs in the U.S. health workforce over the next five years as both PAs and NPs assume hospital roles where they substitute for portions of physician resident services.

Among AGPAW's findings:

❑ There will be increases in the total number of annual PA graduates occurring through the year 2000. Expanding PA program enrollment and anticipated growth in program numbers will expand the supply of PAs in active practice in the nation's health workforce to between 37,500 and 42,000 by the year 2000. Anticipated medical market demand and estimated workforce requirements for PAs will likely exceed supply.

❑ Anticipated demand for PA services will exist in both primary care/ ambulatory practice settings as well as in managed care systems, rural practices, multispecialty group practices, community and teaching hospitals, and subspecialty practices.

❑ To achieve an increase in the total number of practicing PAs in the workforce by the year 2000, it will be necessary for PA educational programs to expand their annual number of PA graduates. A target goal of 40,000 total PAs in the workforce by 2000 would require an increase in the annual supply of PA graduates from the 1800 in 1994 to between 3000 and 4000 PA graduates each year.

❑ To meet anticipated PA workforce requirements, PA educational programs face the challenge of approaches to increase annual student enrollment and maintain levels of educational quality, but are often not given sufficient resources to support such efforts.

Recommendations

❑ AGPAW recommends that in order to support existing PA programs to expand enrollment without compromising educational quality, an increase in the current level of federal support for PA programs would be needed to meet anticipated PA workforce requirements. To boost the supply of PAs, it is recommended that target figures for Title VII PA training support through the Bureau of Health Professions, Health Services and Resources Administration (HRSA) be authorized at $15,550,000 for FY-95, and $19,580,000 in FY-96.

❑ Funding priorities supporting PA educational activities should continue to give incentives to programs that demonstrate effectiveness in the deployment of graduates in primary care roles and location in rural communities and medically undeserved areas.

❑ Public funding used to support health professions educational programs should be allocated based on the degree to which programs demonstrate graduate outcomes addressing the nation's health care problems, and the extent to which programs show contributions to improvements in primary care access and delivery.

❑ Funds to be designated in the future GME all-payors pool including the Medicare trust fund, should include PA educational programs among those receiving medical education payments. Academic health centers and other educational institutions sponsoring PA programs should receive funding support for clinical training activities for PA students and/or expand clinical training opportunities among PA and other health professions students.

❑ PAs and their medical service contributions should be included in future national and state level health workforce policy planning. Policy initiatives should include removing legislative obstacles to PA clinical practice effectiveness such as restrictive state statutes governing scope of practice, supervisory requirements, and prescribing authority, along with revision of inconsistent health payor policies for coverage of PA clinical services.

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AGPAW's Purpose

Council on Graduate Medical Education

Ad Hoc Advisory Group on Physician Assistants and the Workforce

Purpose

1. To define the parameters of the practice roles of physician assistants, both currently and under the context of health care reform, and describe PA contributions in primary care and in improving health care access and effectiveness.
2. To assess current and potential utilization patterns of PAs in health care services delivery in:

   (1) primary care roles

   (2) HMO's and managed care systems

   (3) specialty practice roles

   (4) roles as inpatient providers

   (5) PA potential to replace physician residents in GME programs preparing to downsize capacity
3. To describe the educational process for PAs and the capacity of PA programs to produce increased numbers of graduates to accommodate expected demand projections for these providers.
4. To recommend factors to be taken into account in examining and developing projections of the number of PAs, and the impact of those projections on physician requirements, including the delivery of primary care services and in other health care roles.
5. To develop assumptions underlying the determination of requirements.
6. To evaluate the impact of PA supply and utilization trends on future physician workforce requirements, taking into account the impact of nurse practitioners and certified nurse midwives' supply and utilization on these requirements.
7. Make recommendations to the Council on Graduate Medical Education (COGME).

Introduction

Physcian Assistants (PAs) in America's Health Workforce and the Purpose of this Report

The composition of America's health care workforce has once again become a central focus of policy attention. The likelihood of long-term health system inefficiencies and increasing costs related to the continuing physician generalist-specialist imbalance, coupled with rising concern regarding stubborn health care access problems stemming from uneven provider distribution, have stimulated renewed discussion of issues, roles, and requirements of health professionals. Such concerns have spurred health reform policy debate regarding the educational preparation, financing methods, and practice utilization of health care professionals.

A general consensus now exists among the nation's health professions organizations, legislative and health policy groups, and health services researchers, that America's health care system is deficient in primary care delivery, and clearly lacks sufficient numbers of physician primary care providers. The Council on Graduate Medical Education (COGME), as well as others influential in health professions policy, have concluded that America must take steps to strengthen its primary care health workforce [1-6].

Health care reform proposals now under Congressional consideration aim to improve primary care delivery capabilities by enacting changes in the systems of financing of health professions education, in particular physician graduate medical education (GME), as well as to modify clinical practice and payment schemes to better emphasize provision of primary care services. COGME believes the following physician workforce goals should be achieved by the year 2000 [1]:

- First year physician residency positions should be limited to 10% more than the number of U.S. medical school graduates.
- At least 50% of residency graduates should enter practice as generalist physician providers.
- The number of underrepresented minority medical students should be doubled.
- Rural and inner city primary care shortage areas should be eliminated.

Health workforce reform measures aimed at strengthening America's primary care delivery system now also include strategies focused on increasing the utilization of other types of health care providers, i.e., professionals such as physician assistants (PAs), nurse practitioners (NPs), and certified nurse-midwives (CNMs).

PAs have emerged as versatile, highly skilled clinicians in the U.S. health system who make important contributions to clinical services quality and practice effectiveness. PAs, NPs, and CNMs have gained widespread acceptance among their patients, the general public, and physicians and other health care professionals (Appendix A).

In their 25-year history, PAs have demonstrated that they possess an extensive range of clinical capabilities to augment medical care staffing in both primary care as well as specialty care practices. PA utilization has been shown to have positive effects on service delivery quality and practice effectiveness [7]. However, barriers to practice effectiveness exist which stem from uneven state licensing regulations as well as variation in physician practice style and delegation patterns. PAs are often underutilized in relation to their educational preparation level and authorized scope of practice in the health workforce. Research findings and past experience suggest that increasing the utilization of PAs in the health workforce could improve capabilities in primary care delivery. Based on such potentials, an increase in the demand for PA services is expected to occur in the health system. Because they are efficient in providing primary care services, demand for the services of PAs and similar health providers is likely to continue in the

medical marketplace, even if presently considered health care reform measures fail to occur. Under a scenario of health reform which includes workforce changes, and given an increase in the requirements for primary care services under universal coverage, more medical practices and health organizations are expected to employ PAs on medical staffs. Such workforce requirements in the primary care sector, as well as changes likely in hospital staffing, will continue in the coming years and exacerbate the existing shortage of PAs. There were 23,500 PAs in active practice in 1993. PA programs will graduate 1,800 new PAs in 1994, a number far less then present marketplace demand; the addition of these new PAs will bring the current total in active practice to about 25,000. AGPAW projects that the number of annual PA program graduates will rise in the coming years but will remain insufficient in meeting anticipated workforce requirements.

Recognizing their increasing utilization and potential to contribute to America's health care workforce, COGME has sought to examine the current and future impact of these providers in health services delivery. Within its Congressional mandate to study and make recommendations on a variety of factors having an impact on future physician requirements, COGME convened in June 1993, the Advisory Group on Physician Assistants and the Workforce (AGPAW). Among the charges given to AGPAW by the Council were: to assess the current roles and contributions of PAs in the United States health system; to determine the current supply of PAs in the workforce and project annual PA graduates; to review evidence on PA clinical abilities, costs, and practice effectiveness; to project the future workforce requirements for PAs and which sectors are anticipated to needs more PAs; to describe evolving patterns of PA utilization in medical practice; and to discuss how trends in PA utilization will affect future workforce requirements for physicians, particularly primary care physicians.

PRIMARY CARE PROVIDERS

A critically important element of any nation's health system is primary care. Effectiveness in primary care delivery has been shown to depend, at least in part, upon using the mix of health care personnel that will take advantage of the capabilities of various types of health professionals [8], and to require a proper balance of generalist and specialist physicians. Conventional wisdom and expert panel findings show that the current ratio of primary care versus specialist physicians in the U.S. is roughly the opposite of the proportions deemed ideal. Health system experts contend that a system which is top-heavy with physician specialists and subspecialists is likely to be more costly and less accessible than delivery systems which emphasize generalist providers and which are built on a foundation of primary care [9,10]. As a result, policy groups have called for America's health care professions to refocus efforts to increase the numbers of primary care providers in the workforce, to produce providers whose roles would address identified societal needs, and to reform educational and practice approaches in order to achieve this goal. A number of national commissions, medical philanthropies, scholars and policy analysts have concluded that the key to improved health care access and cost containment is a health workforce composition which emphasizes primary care [1,4-6,10-13]).

The COGME AGPAW first attempted to determine an acceptable working definition of primary care which was used to determine present PA contributions and potentials to provide such services. AGPAW adopted the definition of primary care used by COGME in its *Third Report*.. This definition states that primary care has four essential components :

- First-contact care for persons with undifferentiated health concerns
- Person-centered, comprehensive care that is not organ or problem specific

❑ An orientation toward the longitudinal care of the patient

❑ Responsibility for coordination of other health services as they relate to the patient's care [2].

PAs, as well as NPs and CNMs, represent new health professionals whose professional conceptualization was based upon their capability to provide primary care services. Their creation was based on the rationale that PAs and NPs could extend primary care services in medical practices and improve access to care to medically needy populations. To a large degree, they have fulfilled this expectation, although their total number remains small as compared to physicians. PAs and NPs are health professionals who serve as essential team members, along with primary care physicians (family practice, general internal medicine, and general pediatrics), within America's primary care workforce.

Until recently, health workforce policy discussion has given little attention to the clinical contributions of PAs not only in supplementing primary care delivery, but also with regard to their potential to increase medical staffing effectiveness in other clinical settings. Changing circumstances have resulted in a growing awareness of PAs as competent members of the health care team. The recent report of the Clinton Administration Health Reform Task Force, as well as workforce assessments put forth by neutral health policy groups, call for a doubling of the supply of PAs in the coming years in order to help meet anticipated future demand for primary care providers [14,15].

RESHAPING THE HEALTH WORKFORCE

COGME has proposed the goal of achieving a 50-50 generalist-specialist an balance in the health workforce by the year 2020 [1], a policy objective endorsed by the American Academy of Family Physicians, the American College of Physicians, and Federated Council of Internal Medicine [16], and the Physician Payment Review Commission (PPRC) [5]. Reaching the 50-50 goal of physician distribution will take several decades to occur and will require marked shifts in the present patterns of career specialty choices of medical graduates. Trends observed among medical school graduates and physicians completing residency training show a steady increase in the proportions choosing specialty or subspecialty practice [17]. At present, only about 15% of all medical graduates select residency training programs in primary care. If the 50-50 goal were to be met by the year 2020, this would require, beginning in 1994 and continuing for each year thereafter, that over 80% of all medical graduates choose residency training programs in primary care or medical generalist fields [1].

To achieve this balance in the ratio of physician specialty distribution, substantial restructuring of GME is envisioned. Public funds would be used to reallocate physician residency positions reflecting emphasis on primary care. Public funds would also be used to increase the attractiveness of primary care/generalist practice among medical school graduates. Since increasing primary care physician training capacity and/or limiting specialty residencies is unlikely to have much of a near-term impact on primary health care access, increasing the utilization of PAs and similar health providers in primary care roles seems to offer important advantages.

A comprehensive policy analysis addressing the role of the PA in the health workforce has not been issued since the mid-1980s. Since then, there have been a number of changes in the health sector affecting PA utilization. New patterns in the division of medical labor and in the organization and financing of health services have raised important issues regarding the roles of PAs and similar types of health professionals.

Workforce policy development has been constrained by the lack of research data on present patterns of PA practice activities. AGPAW has attempted to respond to COGME's request, seeking to shed light on the potentials for PAs to substitute for physicians in various practice settings. The AGPAW has evaluated a large amount of the policy-relevant health services research studies performed on PAs and similar practitioners in the 1970s. It is intended to update not only COGME, but also other public and health professions organizations, on the roles that PAs play in medical services delivery. There is a need for more data on PA practice characteristics and professional contributions and future roles in the health workforce.

In the preparation of this document, AGPAW utilized data and information obtained from the American Academy of Physician Assistants; the Association of Physician Assistant Programs; the Division of Medicine and Office of Health Professions Analysis and Research, Bureau of Health Professions, Health Resources and Services Administration, FHP of Utah, and health services researchers and policy makers from academic as well as private and public settings. These materials, plus the collective input and review of Advisory Group members, were invaluable contributions enabling the effort to present as accurate and timely profile of the PA profession as possible.

AGPAW's Report includes current information on PA educational preparation, practice patterns and geographic distribution, professional activities, and anticipated workforce demand. A summary of AGPAW's conclusions are provided as Findings in Chapter 8 grouped under the headings of [1] PA education and program support; [2] PA practice characteristics; [3] anticipated demand for PAs in the health system; and [4] obstacles to practice effectiveness. AGPAW's findings on the current status of the PA profession and workforce requirement projections form the basis of a number of workforce policy recommendations, grouped under the same headings, which we present to the Council for inclusion within future health workforce planning activities. Collectively these recommendations, if enacted, would enhance the degree of PA contributions to health services delivery, particularly augmenting primary care services in areas of need, allow more effective and broad based utilization of these providers in the health system. Recommendations are presented in Chapter 9.

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PAs Defined and Described

PA Clinical Roles, Scope of Practice, and Legal Aspects

PAs are health care practitioners who assume a broadly defined range of medical diagnostic and patient management functions performed with physician supervision in both office practice settings and health institutions. PAs are prepared by education and national certification and proven by over 30 years' practice experience to be safe and effective health providers (Exhibit 1).

ROLES

The philosophy of the first PA educational program established at Duke University (see Chapter 3) conceptualized the basic PA role to be that of a supervised general medical clinician. Duke University intended that its PA graduates be practitioners competent to assist either a family physician or general internist [1]. Yet, as the profession has evolved and expanded, other educational and practice models have broadened the range of clinical roles that PAs may play. They have shown themselves to be clinically versatile health providers, capable of serving effectively not only as medical generalist/primary care providers, but also in roles working in many clinical specialties and subspecialties. These later practice roles were not at first anticipated to be filled by PAs, but have become areas in which their utilization of late has grown considerably.

The clinical services performed by PAs which, in a broad sense, comprise those generic to the PA professional role may be grouped under six categories [2].

1. *Evaluation* - initially approaching a patient of any age group in any setting to elicit a detailed and accurate history, perform an appropriate physical examination, delineate problems and record and present the data;

2. *Monitoring* - assisting the physician in conducting rounds in acute and long-term inpatient care settings, developing and implementing patient management plans, recording progress notes, and assisting in the provision of continuity of care in office-based and other ambulatory care settings;

3. *Diagnostics* - Performing and/or interpreting, at least to the point of recognizing deviations from the norm, common laboratory, radiological, cardiographic, and other diagnostic procedures used to identify pathophysiological processes;

4. *Therapeutics* - Performing routine procedures such as injections, immunizations, suturing and wound care, management of simple conditions produced by infection or trauma, and assistance in the management of more complex illness and injury, which may include assisting surgeons in the conduct of operations and taking initiative in performing evaluation and therapeutic procedures in response to life-threatening situations;

5. *Counseling* - Instruction and counseling of patients regarding compliance with prescribed therapeutic regimens, normal growth and development, family planning, emotional problems of daily living, and health maintenance; and

6. *Referral* - Facilitating the referral of patients to community health and social service agencies when appropriate.

The clinical versatility of PAs, that is, their ability to fulfill roles in both primary care and specialty practice, relates to their generalist educational orientation and close professional relationships with physicians. After examining the initial experiences of Duke PA graduates, who were deployed in both primary care and specialty practices, Eugene Schneller characterized the PA-physician role as one of "negotiated performance autonomy" [3]. This term reflects the concept that in order for PAs to be fully effective in clinical practice, physicians and PAs must develop a close professional relationship, one based on trust, competency, and mutual understanding of respective professional roles. Physician practice

"style", that is, the way in which medical tasks are divided among health professionals utilized in the practice, has been shown to be a key determinant of MD-PA effectiveness [4].

In primary care roles, PAs extend the capabilities of generalist physicians. They provide physician-equivalent levels of quality of care in delivering health services and have proven to be cost effective in most clinical practice settings [5]. Importantly, they have demonstrated a willingness to serve in practice areas where they fill existing gaps in health services to rural and medically underserved areas and to special and ethnically diverse populations served by county institutions and community and migrant health centers [C/MHCs][6].

LEGAL PARAMETERS

The introduction of the PA into the American health system brought with it the necessity to consider appropriate legal and regulatory approaches to enable these and other emerging health practitioners to enter clinical practice [7]. The legal basis of PA practice is codified in state statutes granting authorization to licensed physicians to delegate a range of medical diagnostic and therapeutic tasks to individuals who meet educational standards and practice requirements to qualify as a PA. Authority for medical task delegation is based on the legal doctrine of *respondeat superior*, which holds that it is the physician who is ultimately liable for PA practice activities, and mandates that doctors who employ PAs appropriately define and supervise their clinical actions. State acts exempt PAs from the unlicensed practice of medicine with the stipulation that they function with physician supervision.

PAs are recognized as health practitioners authorized to perform physician-delegated medical diagnostic and therapeutic tasks by health licensing boards in 49 states and the District of Columbia; Mississippi is the only state which does not formally recognize PA practice. Thirty eight states, the District of Columbia, and Guam authorize PAs to prescribe. Initial states which amended their medical practice statutes to recognize PA practice in the late 1960s were North Carolina, Colorado, Oklahoma, and Kansas. PA practice regulation has progressed from a delegatory model achieved by amending medical practice acts to a regulatory/authority model wherein health licensing boards are explicitly authorized to govern PA practice. Typical state regulatory acts establish PAs as the agents of their supervising physicians, and PAs maintain direct liability for the services they render to patients. Supervising physicians who define the standard to which PA services are held, are vicariously liable for services performed by their PAs under the doctrine of *respondeat superior*.

EXHIBIT #1

Definition of the Physician Assistant

The physician assistant is a health professional who practices medicine with physician supervision. As a member of the health care team, the physician assistant provides a broad range of medical diagnostic, therapeutic, and health promotion/disease prevention services. Physician assistants are qualified by graduation from an accredited PA educational program and certification by the National Commission on Certification of Physician Assistants (NCCPA) to exercise a level of autonomy in the performance of clinical responsibilities within state medical practice-authorized scope of practice and the supervisory relationship. The clinical practice of the physician assistant includes both primary care and specialty care roles, and spans a wide range of medical practice settings in rural and urban areas. The role of the physician assistant is centered on patient care responsibilities, but may include educational, research, and administrative activities.

QUALIFICATION FOR PRACTICE

Qualification for entry to practice as a PA in nearly all states requires that individuals be graduates of a Committee on Accreditation of Allied Health Educational Programs (CAAHEP) - accredited PA educational program and/or pass the Physician Assistant National Certifying Examination (PANCE). The PANCE is a nationally standardized examination in primary care medicine, administered annually by the National Commission on Certification of Physician Assistants (NCCPA). The PANCE comprises both written and practical components, and its content and standards are developed in cooperation with the National Board of Medical Examiners (NBME). At present, NCCPA certification is a required qualification for PA practice in 47 states, and over 92% of all PAs in active practice hold current certification. To maintain certification, NCCPA requires PAs to obtain continuing medical education hours annually and to recertify by formal examination every six years.

Professional activities and scope of practice of PAs are regulated by state licensing boards, which are often boards of medicine, but in some instances are separate PA licensing boards. Since physicians are legally responsible for the actions of their PAs, state laws often require physicians to clearly delineate the practice scope and supervisory arrangements of PAs.

As originally envisioned, the role of the PA encompassed working with physicians in the full range of clinical practice areas: office, clinic, hospital, nursing home, surgical suite, or in the patient's home. Laws in many states were written to give PA a practice scope allowing the physician to delegate a broad range of medical tasks to their PAs. This latitude allows PAs to exercise a degree of clinical judgment and autonomy decision making within the parameters of state scope of practice regulations and the supervisory relationship and is considered essential for PAs to be fully effective in practice. Geographic practice isolation in rural and frontier settings may by necessity result in varying degrees of off-site physician supervision and require the PA to exercise some autonomy in clinical judgment, particularly when the PA is the only available on-site provider. Regulatory reluctance to support such MD-PA relationships in satellite and remote clinical settings restricts the ability of PAs to extend/provide services that might otherwise be unavailable.

As noted, PAs have demonstrated marked versatility in their roles in medical practices. While PA clinical roles overlap to a large extent with those of physicians, in the sense that both provide medical diagnostic and therapeutic services, PAs may also provide health services which may be complementary to physician services [5]. Most PA curricula include instruction in preventive care approaches and encourage PAs to incorporate clinical preventive services in their patient care activities.

PRESENT STATUS

After a period when some questioned the continued need for these providers [8], PAs now enjoy a rising profile among the health occupations as their numbers have grown over the past three decades and the impact of their services has been realized. PAs have clearly arrived as respected members of the health care team, and are commonly employed in many private solo and group medical practices, on clinical staffs in community hospitals, academic health centers, emergency departments, and ambulatory care clinics [9]. PAs also fill critical clinical service gaps as primary care providers in a variety of other settings such as correctional health systems, substance abuse clinics, student health services, occupational health clinics, and geriatric settings [10]. The integration of PAs in American medicine is now confirmed by the growing demand for their services in the health marketplace and by recent strides in achieving full legal, professional, and health payor acceptance of their practice roles.

PAs are comfortable with roles as dependent practitioners and have not wavered in that stance. The fundamental elements of PA practice - use of a referral system, frequent consultation, and periodic review - are said to be synonymous with a well-designed health system [11]. Some have noted that the level of acceptance and integration of PAs in American medicine may be directly related to PA continued adherence to this position and to their willingness to practice in settings, locations, and clinical care areas that physicians deem to be less preferable. Observers believe that utilization of PAs will continue as long as they extend the medical care services of physicians without competing for or challenging physician authority and autonomy [12].

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PA Education

PA Educational Programs:

History, Curricula, Training Innovations, Sources of Funding, Characteristics of Applications, Students, and Faculty; Projections of Future Supply

PA educational programs developed over 30 years ago, many within institutions preparing traditional types of health care professionals. Educational curricula design for PAs were initially based on existing medical education models, and later developed a distinctive health professions curriculum drawing from a number of other health disciplines and approaches. Most PA programs retain a structure resembling a compressed version of medical school and include basic science, preclinical, and clinical components. PA educational programs have kept pace with advancing concepts in health professions preparation, and represent programs shown to be socially responsive to population health problems, practically-focused, and multidisciplinary. PA programs are innovators in developing educational strategies proven effective in the deployment of medical generalist/ primary care providers to medically underserved areas. The success of PA educational models holds lessons for medical education and suggests that the preparation of providers for primary care practice should emphasize clinical skills, awareness of a team approach, and a community orientation [1-5].

PA EDUCATIONAL PROGRAMS

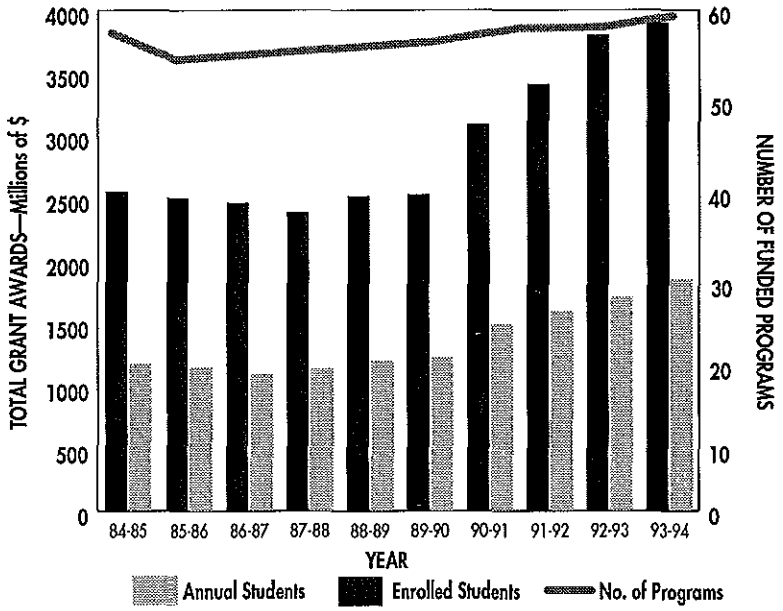
Currently, there are 59 PA educational programs in the United States holding accreditation from the Committee on Accreditation of Allied Health Educational Programs (CAAHEP). PA educational programs exist in 29 states and the District of Columbia, and in 1993 enrolled over 3800 students (Exhibit 2). Among accredited programs, 56 prepare PAs for primary care/generalist roles and 3 programs train surgeon assistants (SAs). By the end of 1993, an estimated 27,403 individuals have completed a formal PA educational program [6].

A majority (82%) of PA educational programs are sponsored by either academic health centers (AHCs), schools of medicine, osteopathy, or health-related professions, universities, and four-year colleges. The remainder are set in teaching hospitals, community colleges, or the U.S. military (Appendix B) [7]. There are 27 (47%) PA programs based in AHCs. In 1993, twice as many AHC-based PA programs received federal grant award support as non-AHC-based programs.

Traditionally, PA education has relied on a philosophy that student performance is based upon demonstration of a standard level of clinical competency, and has avoided assignment of a specific academic degree for completion of what may be termed "standard" PA preparation. The competency based notion holds that it is proficiency in the clinical skills necessary for primary care/ generalist practice which serves as the "gold standard" of PA educational preparation. Thus, a number of PA programs have developed curricula based on demonstration of clinical knowledge and skills which may or may not fit institutional requirements for a award of a specific academic degree. By allowing flexibility with regard to the terminal degree and/or credential awarded for PA education, programs have been able to develop creative and effective models in preparing PAs to assume clinical roles across a wide range of practice settings and specialities. This flexibility has also facilitated the recruitment of individuals from diverse ethnic, cultural, and educational backgrounds into PA educational programs. Such PAs have been shown to be those most likely to practice in primary care roles in medically underserved areas [8,9]. The competency-based orientation of PA education has proven to be effective in preparing health care professionals to qualify for the PANCE, and to meet state licensing board requirements.

EXHIBIT #2

Estimated Number of Students and Graduates From PA Programs Academic Years 1984 - 1993



SOURCE: Division of Medicine, Bureau of Health Professions

While most (62%) of the nation's PA educational programs presently award the bachelor's degree, there is an increasing trend among sponsoring universities to grant the masters degree for completion of a standard (two year) PA educational program, or to offer a masters option. At present, there are 10 programs offering a masters degree for completion of standard PA education; most of these are two year, AHC-based programs awarding a masters degree; one three year PA program has long awarded the masters degree; one program offers a masters option. The majority [8] of PA programs who have converted PA academic curricula to meet graduate-level institutional requirements have done so since 1987. One medical school-based PA program awards the graduate certificate. Among the institutions whose PA programs have shifted to the masters level are Duke University Medical Center, Emory University School of Medicine, Baylor College of Medicine, Yale University, and The George Washington University, as well as programs at the Universities of Iowa, Nebraska, Texas, and Colorado. Several types of masters degrees are awarded by sponsoring programs for completion of PA education: Four PA programs award the master of science [MS] degree, two programs award the master of health science [MHS] degree; two programs award the master of science in physician assistant [MS in PA] degree, one program awards a master of medical science [MMS], one the master of physician assistant [MPA] degree, and one program offers PA students the option to obtain a masters of health professions [MHP] degree.

Several institutions have developed innovative joint degree programs which combine the standard PA curriculum with a graduate degree in a health-related field. Examples include the Physician Assistant/Master of Public Health Program at The George Washington University, and the Physician Assistant Master of Science Program in preventive medicine at the University of Iowa. These programs have higher entrance requirements and extend for longer periods of study than standard PA curricula. Yet another type of specialized PA postgraduate educational curricula are recently-appearing programs awarding the masters degree aimed at PA graduate practitioners. These programs vary in curriculum content, some having primarily a clinical emphasis, and others a focus on research and health policy skills.

EXHIBIT #3

Physician Assistant Educational Programs, Selected Characteristics, 1994

Length of Instruction PA educational programs typically comprise about 21 to 23 consecutive months of instruction; program length ranges from 20 to 36 months.

Institutional Sponsorship

School of Allied Health Professions .. 28
School of Osteopathic Medicine) 4
Two Year College 3
University Hospital 1
PA Programs Based in Academic Health Centers (AHCs) 27
School of Medicine 11
Four Year College 13
Military 3

Credential/Degree Awarded

Masters degree 11
Bachelors 36
Associate 3
Certificate only 8

Program Financing/External Support

Total Program Budget (mean) $457,000
Programs Receiving Support (FY-93) 33
Programs Receiving Support (FY-94) 46
Grant Award/Program (mean) $143,000

PA Program Applicants and Enrollees (1992-1993)

Total Estimated Applicants = 11,500
Mean Applicants/Program = 203
Total Students Enrolled = 3710
Mean Enrollment per Program per Class = 33
Mean Student Enrollment, Year 1, = 35/program
Mean Student Enrollment, Year 2, = 28/program
Women, as a percentage of total enrollees – 59%

Racial/Ethnic Minorities, enrolled students

— African American = 8%
— Hispanic = 5.2%
— Asian/Pacific Islander American Indian/Alaskan Native = 4.3%
— Caucasian = 82.5%

Cost Per Student - (mean figure representing total cost of PA education to students enrolled in a two year program; figure includes tuition, fees, books, and equipment; excluding living expenses) - Cost per year = $9017; total cost = $18,034.

SOURCE: Oliver, D.R. Ninth Annual Report on Physician Assistant Educational Programs in the United States, 1992-1993. Alexandria, VA: Association of Physician Assistant Programs, 1993. Based on data on CAAHEP-accredited PA programs in 1994, N = 59.

PA EDUCATIONAL MODELS

In addition to the Duke approach, a model which has become a curriculum template for many emerging programs, other manpower approaches developed in sponsoring institutions. The MEDEX (medical extension) PA model was pioneered and first instituted at the University of Washington by Richard Smith, MD, in 1969, and was subsequently adopted in medical teaching centers including the University of Utah, Dartmouth Medical School, and the University of Southern California. MEDEX model PA programs strongly emphasized primary care and accepted only individuals with extensive prior health care experience. Upon acceptance, MEDEX students were matched to a sponsoring primary care physician within the community who agreed to serve as the students clinical preceptor; physician preceptors often hired their PA preceptees upon graduation. The MEDEX PA curriculum comprised six to nine months of intensive didactic medical science coursework, followed by a 12 to 15-month community based primary care preceptorship in the practice of the matched physician and typically in a medically undeserved area.

The first specialty model of PA education was developed Henry Silver, MD, in the Department of Pediatrics at the University of Colorado in 1969. The Child Health Associate Program comprised a three year, medical school-based specialty curriculum initially enrolling individuals with either a nursing credential and/or prior clinical pediatric experience. This program was among the first to award the master's degree for PA education.

Another PA educational model, where a PA curriculum was integrated into a four-year, liberal arts college structure was first developed at Alderson-Broaddus College in 1969 by Hugh Myer, MD. This so-called 2 + 2 year approach, where the four year curriculum is divided into a pre-professional phase (consisting of courses typically taken in the first two years of college, i.e., liberal arts, general science courses), and followed by a two year professional phase identical in curricular content to Duke model programs [10]. Nationally, the Association of Physician Assistant Programs (APAP) is the organization which represents the interests of PA program faculty and sponsoring institutions.

ACCREDITATION

The current 59 accredited PA educational programs in the U.S. meet curricula standards for PA educational programs as defined in the "Essentials of an Approved Educational Program for the Assistant to the Primary Care Physician" [11]. Accreditation criteria were first developed and adopted by the Council on Medical Education of the American Medical Association in 1971, with collaboration from medical groups including the American Academy of Family Physicians, the American College of Physicians, the American Academy of Pediatrics, and the American Society of Internal Medicine. Following the organization of the Committee on Allied Health Education and Accreditation (CAHEA) in 1977, the "Essentials" were revised and updated in 1978, and again in 1985 and 1990 reflecting the evolving nature of PA utilization and preparation requirements. PA program compliance with criteria in the "Essentials" is regularly monitored and assessed by the Accreditation Review Committee on Education for the Physician Assistant (ARC-PA). "Essentials" guidelines call for programs to submit an in-depth self-study report which, along with periodic on-site visits, serve as the basis serve ARC-PA recommendations to CAAHEP. In 1994, as part of a reorganization of allied health professions educational accreditation systems, CAAHEP, a freestanding agency, assumed authority for the accreditation of PA educational programs.

Outlined in the "Essentials" are the core instructional components required of accredited programs, including guidelines addressing not only curriculum content areas like requirements for clinical training affiliations, basic and clinical science course offerings, and faculty qualifications, but also important program support services in areas such as admissions, publications, student scholarship and financial assistance, library facilities, and general institutional support.

PA educational programs offer curricular configurations all of which lead to the endpoints of eligibility for certification and practice qualification, but award different types of academic degrees in recognition of completion of PA training. The "Essentials" give educational programs and their sponsoring institutions broad latitude in instructional approaches. As a result, PA programs have developed innovative models of nontraditional yet effective approaches in health professions education and placement.

Recent reports indicate that there are a large number of new PA programs under development and preparing to enroll students in the near future. In addition to the 59 existing accredited programs, there are 12 new PA programs that have received Letters of Review from CAAHEP as of March 1994 [12]. A Letter of Review is the first step in the process of obtaining full accreditation status from CAAHEP; several of these programs are scheduled to come on line in 1994-1995. According to the AAPA and APAP, there are at least 30 additional PA educational programs known to be in various stages of development in academic institutions.

PA educational programs must hold accreditation by CAAHEP or have received a formal Letter of Review in order to be eligible for grant support from the Bureau of Health Professions. Licensing boards in nearly all states require that individuals seeking to qualify as PAs must be graduates of an accredited educational program.

PA CURRICULUM

The general philosophy of PA programs comprises a broadly-based approach to primary care health professions education. This focus has resulted in curricula that give PA students a strong foundation in primary care medicine, yet also prepare them to enter a wide range of other clinical areas.

The format of the typical PA program is an intensive, two-year or longer, medically-oriented curriculum, with roughly 10 to 12 months devoted to didactic instruction in the basic and clinical sciences, followed by a similar period of rotating clerkships and preceptorships in all major clinical disciplines. Didactic courses include anatomy, physiology, microbiology, biochemistry, pathology, pharmacology, and the behavioral sciences. Instruction is also provided in the clinical sciences with course work in physical diagnosis, pathophysiology, and clinical diagnosis, communication and interpersonal skills, epidemiology and preventive medicine, clinical procedures and surgical skills, and interpretation of laboratory tests [7]. Courses in the basic medical sciences constitute about 75% of the total didactic portion of PA curricula. Instruction devoted to the behavioral and social sciences averages over 124 contact hours per program, and the range of subjects includes such topics as psychosocial dynamics, health promotion/disease prevention, bioethics, medical sociology, death and dying, and cross-cultural medicine.

During their second year, PA students typically obtain clinical training experiences while serving on rotations, usually four to eight weeks in length, conducted over a wide range of inpatient and outpatient care settings. Most PA programs require students to complete rotations that typically include experiences in inpatient medicine, primary care/ ambulatory medicine, surgery, pediatrics, obstetrics and gynecology, emergency medicine, and psychiatry. Clinical experiences offered also include elective rotations, and commonly include a terminal preceptorship in a primary care practice setting. While serving on these clinical rotations and preceptorships, PA students are given instruction by practicing physicians, residents, graduate PAs, and a variety of other health care professionals.

INNOVATIONS IN PRIMARY CARE

The curriculum content of the first PA programs was influenced by the objectives and expectations of the founders of the profession most of whom believed that the preparation of PAs should emphasize roles as primary care and general medical providers, and whose clinical practice utilization should focus on medically underserved communities. In several instances, the curricular design of PA programs was based upon instruction in the knowledge and skills necessary for the recognition and management of the patient problems encountered most often in primary care practice [3]. This

problem-based approach differed considerably from the traditional curricular approach common in undergraduate medical education where course content was often determined more by departmental considerations often unlinked to the needs of graduates for future practice. With the latitude provided in the "Essentials" and coupled with a mandate to create a new approach to the education of a new type of general medical professional, PA educators were able to develop a focused curricula which combined essential content from the basic medical sciences, emphasis on the attainment of important clinical skills, and methods of determining program educational objectives and coordinating courses, lecturers and instructors. Federal Grant Awards provided support to PA educational to develop innovative medical generalist curricula in part because PA educators were free to enlist only those basic and clinical faculty best suited to meet program content objectives which were based on the expected competencies of graduates. Developing PA programs were also among the first health professions to include disciplines and topics such as behavioral medicine, health promotion/disease prevention, epidemiology, communication and counseling skills, and biomedical ethics in their curricula. Such subjects have only recently begun to be included in undergraduate medical education. Similarly, PA programs were quick to include in curricula instruction in areas like substance abuse prevention and treatment, health care for homeless populations, women's health, geriatric care, environmental/occupational medicine, mental health, and skills in delivering clinical preventive services.

PA educational programs have been successful in the implementation of curricular innovations that have not only centered on preparation for primary care practice, but also have encouraged location in medically underserved areas. PA educational models have been developed which use a decentralized approach; the first such program was the MEDEX Northwest Program of the University of Washington. Others include Primary Care Associate Program of Stanford University and the University of Utah School of Medicine Physician Assistant Program. These and other PA programs have pioneered in the development of effective methods of health professions education and deployment resulting in the placement of large proportions of graduates in primary care roles and in practice in medically underserved areas, including clinical site training sponsored with Area Health Education Centers (AHECs) [13].

More recently, decentralized satellite training initiatives have been developed at the MEDEX Northwest PA Program of the University of Washington. MEDEX Northwest selects students who might not otherwise be able to relocate to urban or academic health centers but who have been deemed to have the potential - based on prior health care experience - to provide primary health care in underserved areas. This model has expanded PA educational opportunities in rural practice sites in Washington and five other states (Alaska, Montana, Idaho, Oregon, and Nevada). At the MEDEX Northwest satellite teaching site in Sitka, Alaska, 12 Alaskan Native students are enrolled who receive their clinical experiences in practice settings in rural Alaskan communities [14]. Other PA educational programs also developing satellite-model clinical training in underserved areas include those emerging at the Medical College of Georgia, University of Texas Medical Branch at Galveston, University of Nebraska, St. Louis University, and Nova Southeastern University. A central element in the structure of these community-based satellite PA educational programs are their strong ties to regional Area Health Education Centers (AHECs), linkages to community provider networks, and the participation of practices and clinics serving medically needy populations.

One of the most notable characteristics of PA educational programs has been their ability to offer medical curricula which address societal health care needs and to prepare practitioners who will contribute to improvements in health access and service delivery in needy ares. Most recently, PA programs have developed new graduate level educational tracks which focus on the preparation of providers to help meet workforce requirements in rural communities. Examples include postgraduate PA curricula offerings sponsored by Alderson Broaddus College (West Virginia) PA Program in rural primary care, and the rural health track within the PA Program of the University of Nebraska Medical Center.

Gupta, Konrad, and Hooker conducted a study of all accredited PA educational programs to determine the extent to which they provide rural primary care exposure to students. By merging zip codes of PA program training sites with those of population tracts from federally-designated rural areas, they were able to determine the location of sites offering clinical training experiences for PA students. While only two PA programs are located in rural counties, 31 of 50 (62%) programs offered a total of 288 clinical training sites in 234 non-metropolitan counties. This represents exposure of PA students to patients in 10% of 2,342 non-metropolitan counties in the U.S [15].

FEDERAL SUPPORT FOR PA EDUCATION

Federal support for PA education began in 1972, and since then has totaled over $135 million (Exhibit 4). Total annual grant awards over the years have ranged from $4 to $8 million, with the FY-94 figure at approximately $6.5 million. Currently, grant support for PA educational programs is authorized under section 750 of Title VII of the Public Health Service Act and promotes the educational preparation of PAs for roles in primary care settings and utilization in medically underserved areas. In part due to federal grant support, PA educational programs have been successful in developing curricula focused on primary care, and in strategies in deploying graduates to practices in areas of need. PA education grant support is administered through the Division of Medicine, Bureau of Health Profession, Health Resources and Services Administration (HRSA).

Less than half of the 59 eligible PA educational programs (33) received federal grant support in FY-93, which totaled $5 million. In FY-94, there was a modest increase in the level of funding to $6.53 million; of this amount, $6.38 million went in direct support for PA training with the remainder allocated for PA research projects and faculty development contracts by the Bureau of Health Professions [16]. In FY-94, there was a sharp rise (to 46) in the number of programs receiving HRSA grant support; this includes a number of new PA educational programs.

Statutory authorization for PA training grant support for FY-95 is set at $9.0 million. Congressional appropriation of the fully authorized amount would help many of the existing PA programs who are expanding their enrollment with limited resources. It would also give needed start-up funds to the growing number of universities, academic health centers, and colleges seeking to establish new PA programs. Increased funding is likely to be required to allow PA programs to boost graduate output in the coming years without risking educational quality.

The mean annual budget of PA educational programs in 1993 was $457,000. Federal grant support among funded programs during that year averaged $143,514. Over the past decade, when federal funding levels

have remained constant at roughly $5 million per year, greater levels of internal support from sponsoring institutions have enabled programs to sustain operations and develop some measure of self-sufficiency [17]. In addition, recognizing the increasing needs in primary care in underserved areas, some states such as California, Kansas, and New York, have adopted funding initiatives designed to expand PA educational program enrollment capacity and graduate output.

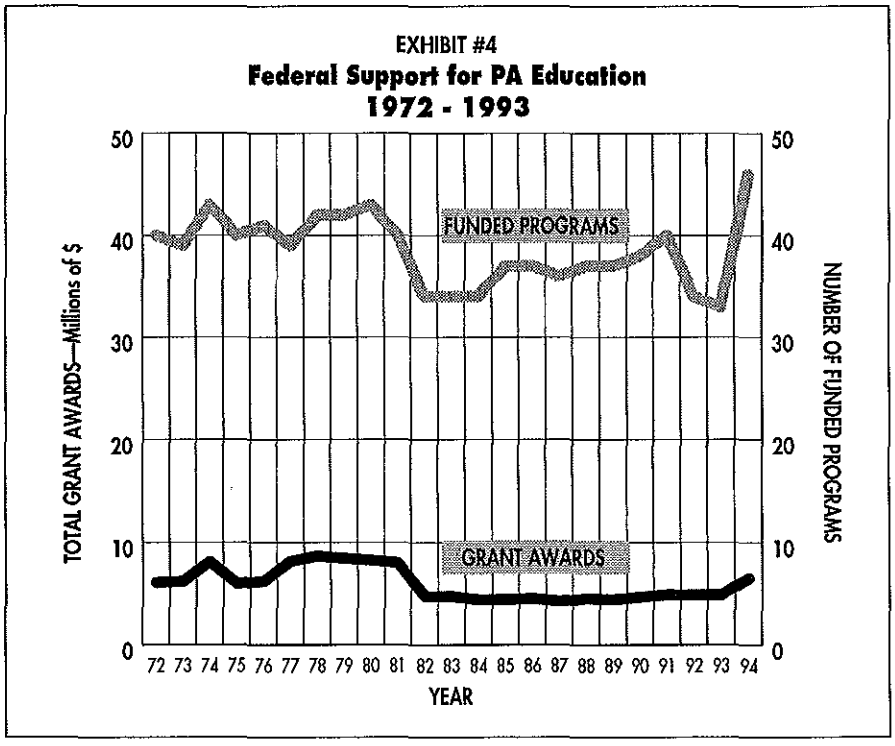
PA educational programs have been responsive to federal grant program initiatives which target service in rural areas, medically underserved areas, and delivery of primary care to needy populations [18]. Relative to other health professionals, the deployment record of PAs to practices in rural communities and medically underserved areas has been impressive [19-21]. Over half of all federally funded PA programs have developed specific curricular content addressing the health and social problems of medically underserved populations such as persons living in inner cities, remote areas, correctional systems, geriatric facilities, or rehabilitation facilities. PA curricula also typically include instruction in topics such as management of persons with HIV/AIDS, counseling regarding the risks of adolescent pregnancy, measures to reduce infant mortality, required schedules of pediatric immunization, health behavior to lower the risk of cancer and heart disease, and skills in the management of health problems which occur disproportionately among medically underserved populations. To ensure that students receive adequate clinical opportunities to complement didactic instruction, most PA educational programs have developed linkages with AHECs, Rural Health Clinics, Community/Migrant Health Clinics (C/MHCs), and other primary health care agencies.

In 1992, an initiative to enhance PA clinical practice among underserved populations and in rural communities was developed and jointly sponsored by the Health Resources and Services Administration, the National Rural Health Association, the American Academy of Physician Assistants, and the Association of Physician Assistant Programs. The goal of this effort is to further promote PA contributions to primary care delivery in rural communities and medically needy areas by providing support for Migrant Health Clinic Fellowships for PAs.

PA STUDENTS

During 1992-1993, the nation's PA programs enrolled a total of approximately 3800 students. The mean number of enrolled students per PA educational program was 33, with a mean of 35 students per program in the first year of training and 29 students per program in the second year. In contrast to early demographic patterns observed among PA students, where male students clearly

EXHIBIT #4



predominated, women now comprise a majority (60%) of all enrolled students. This distribution pattern among PA students has remained constant over the past seven years. As a result, there has been a steady increase in the proportion of women in the PA profession, who now make up nearly half (42%) of all practicing PAs. Among presently enrolled PA students, 18% (versus 10% of medical students) are racial and ethnic minorities [7,22].

PA students build upon their prior educational and clinical backgrounds as well as their considerable life experience. The typical student entering a PA program in 1992 was a 26-year-old white female with a 3.1 grade-point average and over four years of previous health-care experience. Most students (72%) admitted to PA educational programs in 1992-1993 held at least the baccalaureate (B.A. or B.S.) or higher degree upon entry, and had previous health care experience (mean of 2 to 3 years prior experience) in a variety of health care roles, i.e., medical technologist, military medical corpsman, registered nurse, EMT, orderly, etc. Most had earned at least 1 to 2 years of academic credit with courses in basic premedical sciences, i.e., biology, chemistry, psychology and a minimum of a 3.0 grade point average. Among the 7.3% of individuals admitted to PA educational programs in 1992-93 holding a graduate degree (masters or doctorate), 18 of these were international medical graduates (IMGs). The mean age of enrolled students in 1992 was 35.5 years, with the largest proportion (43.8%) comprising those over age 30 [7].

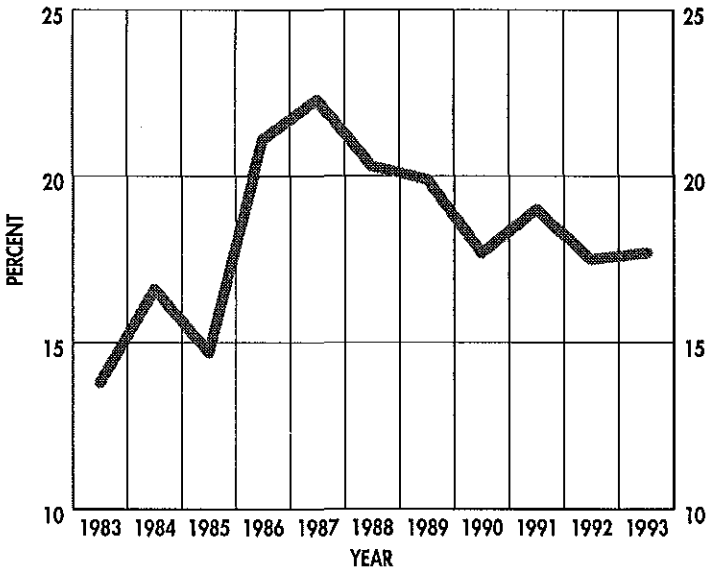
Among enrolled PA students in 1992, 82.5% were Caucasian, 8% were African American, 5.2% were Hispanic, and 4.3% were either American Indian/Alaskan Natives, or Asian/Pacific Islanders. The education of ethnic and racial minorities in PA educational programs over the past 20 years reflects social progress in providing access to health professions opportunities for these groups. Percentages of minorities enrolled in PA educational programs from 1983 through 1992 averaged 18.3% per enrolled class [7].

Only one of the 59 accredited PA educational programs (Howard University Physician Assistant Program) is set within a Historically and Predominately Black College and University. Two other programs (Charles R. Drew University of Medicine and City University of New York/Harlem Hospital Center) also enroll higher numbers of individuals from racial and ethnic minorities. These three programs have graduated over 75% of all African American PAs.

The attrition rate among students in PA educational programs is disproportionate for individuals from

EXHIBIT #5

Minority PA Students as Percentage of Total Enrollment



SOURCE: Division of Medicine, Bureau of Health Professions

racial and ethnic minorities. While overall PA student attrition was 7.2% in 1992-1993, for African American students, attrition was 26.1%, 15.4% for Hispanic/Latinos, and 6.7% for other racial and ethnic minority students; the attrition rate for White/non-Hispanics was 4.6%. Underrepresented racial and ethnic minority persons, in particular African American females, were more likely than nonminority individuals in PA programs to be either lost to attrition or assigned to decelerated tracks [7].

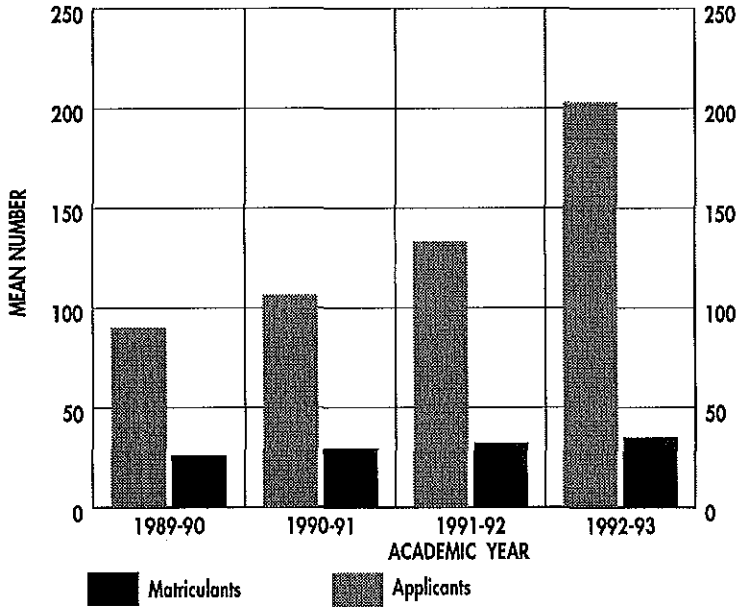
While the proportion of ethnic minority students enrolled in PA programs has averaged 19% over the past nine years, these groups comprise only 9.3% of the practicing PA population. Presently, only 3.7% of all PAs are African American. These figures suggest that past federal policy strategies to aid institutions in increasing recruitment and retention of ethnic minority and disadvantaged students and faculty for PA educational programs have had only partial success and point to the need for additional efforts and policy directives in this area [7,22].

APPLICANTS TO PA PROGRAMS

In response to forces presently occurring in the health professions marketplace, PA educational programs have recently seen a dramatic increase in the number of program applicants. In many programs, this has strained the existing, limited resources of PA programs. A limiting factor has been federal funding support. Levels of HRSA Bureau of Health Professions grant support for PA programs have remained essentially level since 1981. In many programs, expanding applicant and enrollment numbers have stretched resources and placed increased demands on existing faculty. As PA programs cope with the pressures to increase enrollment to meet present market demand for graduates, programs face the reality of insufficient funds to support expansion of enrollment without compromises in the quality of student educational experiences. In 1992, more than 10,500 applications were received by PA educational programs, an average of 203 per program, up sharply (52%) from the 133 applications received in 1991. Between 1988 and 1992, the number of applicants per program increased by 136 percent [7] (Exhibit # 6).

EXHIBIT #6

Applicants and Matriculants, PA Programs, 1989-93



SOURCE: Oliver, DR. APAP, 1993

PA PROGRAM FACULTY

A wide variety of health professionals and professional educators are used in PA educational programs. It is estimated that there are approximately 350 individuals nationwide working in PA programs. These include physicians, PAs, NPs, and doctoral-level instructors in the basic medical sciences, the behavioral and social sciences, and other disciplines. Full-time PA program

professional faculty consist of a program director (a person increasingly likely to be a PA who holds a master's degree), a medical director, usually a physician serving part time, an average of 3.8 FTE personnel serving in various instructional roles, and 2.4 FTE non-instructional PA program personnel.

Like other relative newcomers to health professions education, PA educational programs have experienced difficulty in identifying, recruiting, and retaining qualified faculty members. The combination of an increasing number of enrolled students, institutional demands, and the increasing number of well paying clinical positions has resulted in an "academic hourglass" effect, further complicated by an already insufficient supply of qualified PA educators. Evidence for this phenomenon is seen in rates of faculty attrition in PA programs which has averaged 11 percent per program per year over the past five years, with a 19% increase in the 1990-91 academic year. The chief reasons cited for terminating academic employment included career advancement (31.3%), return to clinical practice where higher salaries are available (23.3%), geographic relocation (15.3%), and job dissatisfaction (8%). Because of the disparity between academic and clinical income potential, faculty appointments structured as joint teaching-clinical practice positions are now a commonplace means of income supplementation for PA faculty. Sixty-nine percent of PA faculty are concurrently engaged in part-time clinical practice, averaging ten hours per week earning an average of $26 per hour.

As with most professional schools, no formal pathway exists for PA-specific educator preparation. Clinically experienced PAs are typically self-referred of recruited into PA education, usually with little or no formal training in educational theory, methods, and applications. Of the PA program personnel holding faculty appointments in 1993, 13.6% held doctoral degrees, 35.2% held masters degrees, and 49.2% held bachelors degrees. The remaining 2% either held other degrees or were not reported [23].

For PA educational programs to meet future workforce requirements and to expand enrollment, the recruitment, retention and professional development of qualified faculty, and in particular, faculty from underrepresented minorities will be critical. At present, the percentage of PA program faculty members (7.4%)

EXHIBIT #7

Credentials of Physician Assistant Program Directors, 1993. (N = 59*)

Credential	Number
Physician (MD or DO)	2
Doctorate (PhD or EdD)	5
Physician Assistant (PA-C)	10
Physician Assistant with masters degree (MPA, MEd, MPH)	25
Physician Assistant with doctorate (PhD, EdD)	8
Nursing Degree RN only	1
RN with masters degree (MSN)	4
NP with doctorate	1
Other Masters degree (MA, MEd, MPA)	2

* Total number PA programs reporting

SOURCE: Faculty Directory, Association of Physician Assistant Programs, Alexandria,VA: APAP, September, 1993

from underrepresented racial and ethnic minorities is higher than that of medical school faculty (3%). In the majority of PA educational programs, there will continue to be a need for faculty role models and mentors from underrepresented racial and ethnic groups [24-25].

EDUCATION FOR PAS IN SPECIALTY ROLES

Formal clinical educational programs have emerged offering advanced supervised clinical experiences for PAs who seek training beyond the standard two year curricula in specialty disciplines. Such programs are referred to as PA postgraduate residency programs, the majority of which are based in teaching hospitals. PA residency programs are typically intensive one-year paid inpatient clinical experiences for highly qualified PA graduates seeking advanced clinical training. In 1993, there were eleven such postgraduate residency programs in the specialty areas of surgery, neonatology, pediatrics, emergency medicine, obstetrics/ gynecology, and occupational medicine. Only two programs offers an academic degree of option; most typically award a certificate upon completion of training. PA postgraduate residency programs are predominantly clinical experiences, but several include a didactic instruction phase. They are not formally accredited thus far, but residency program slots are avidly sought by PA graduates and are well regarded within the profession. PA postgraduate programs are represented nationally by the Association of Physician Assistant Postgraduate Residency Programs, and collectively train approximately 75 individuals each year.

A slightly different form of PA postgraduate education which combines both academic and clinical activities are seen in other recently emerging models. Like PA postgraduate residencies, these programs accept only graduate PAs, but are more academically oriented and include graduate coursework in such areas as research methods, health policy analysis, and public health practice. Examples of these one-to-two year programs include the Graduate PA Program in Occupational Medicine program at the University of Oklahoma which grants the master of public health (MPH) degree, and the Master of Medical Science (MMSc) Physician Assistant Program at St. Francis College (Pennsylvania).

However, only a small percentage (6.2%) of PAs have completed formal postgraduate PA residency programs. The vast majority of PAs who have entered clinical practice roles in specialty and subspecialty areas (nearly half of the profession) have acquired their preparation through educational program grounding plus the on-the-job experience gained working with employing physicians in practices or institutions. The demonstrated capabilities of PAs to adapt readily to and function effectively in a wide variety of clinical practice specialties is probably attributable to their broad, generalist-oriented educational preparation.

PROJECTING PA SUPPLY

Areas deemed critical to the capabilities of PA educational programs to successfully accommodate anticipated expansion in student enrollment include:

- ❑ recruitment, retention and professional development of qualified faculty;
- ❑ Expand existing and establish new linkages with clinical teaching sites, especially ambulatory-based clinical practice settings;
- ❑ effective strategies to recruit and provide financial support targeted to recruit qualified students from racial/ ethnic minorities.

Future efforts of PA programs to expand enrollments to meet anticipated marketplace demand will require increased levels of federal support. There is controversy in PA education regarding the merits and costs of increasing existing program enrollment versus starting new programs. One important issue for existing programs related to expansion

involves increasing institutional competition for existing resources. For example, AHCs who sponsor both a medical school and a PA program may not be able to absorb the added expense, space, and time requirements of more lecture commitments by basic science faculty, residents, and attendings; more classroom space; and more competition for already limited teaching time on ward rounds, in the clinics, and in operating rooms. Additionally, the concurrent demand to produce more generalist physicians may increase competition among medical schools, residency programs, and PA programs for quality primary care clinical sites [23].

Projections of the future supply of PAs entering the workforce through the year 2000 is presented under two scenarios. Estimates of the number of annual PA graduates are given under a scenario of no or minimal change in workforce policy and funding levels and under health care reform (Exhibits 8, 9 and 10). Projections of annual numbers of graduates are based on estimated capabilities of existing PA programs to expand present levels of enrollment and the addition of new programs. Projections of the total number of PAs in the workforce under both scenarios by the year 2000 are given considering annual graduate increases and estimated attrition.

SCENARIO #1
Minimal health care reform

Assumes continuation of federal support for PA educational programs resulting in a modest increase in PA supply. PA graduates will increase even with no change in funding due to expected contributions from new programs; program graduate numbers would increase to approximately 3000 by the year 2000.

SCENARIO #2
Ideal health care reform affecting the PA profession

Assumes an increase in federal funding as part of health care reform; expanded support for PA education would promote efforts by existing and new programs to achieve 4000 graduates by the year 2000.

EXHIBIT #8

Projected Number of Annual PA Educational Program Graduates, Attrition, and Total Number in Active Practice in the Health Workforce, 1993-2000.

Baseline Number of PAs in Active Practice (12/1993) = 23,350

	PA Graduates #s/yr	Attrition (2%/yr)	Total PAs # s in practice	PA Graduates # s/year	Attrition (2%/yr)	Total PAs #s in practice
	Scenario #1			Scenario # 2		
1994	1800	503	24,647	1900	505	24,745
1995	2100	534	26,211	2200	538	26,407
1996	2300	570	27,943	2800	584	28,623
1997	2500	608	29,835	3100	634	31,093
1998	2800	652	31,983	3400	689	33,804
1999	2900	697	34,186	3800	752	36,852
2000	3000	743	36,440	4000	817	40,040

PROJECTION ASSUMPTIONS AND DATA SOURCES

Assumes a baseline of 23,350 PAs in active practice,1993; estimate derived from information derived from Annual Census Data, AAPA, 1993; and Office of Health Professions Analysis and Research, Bureau of Health Professions, Health Resources and Services Administration.

1. Annual supply projections include estimates of increased graduate output based on capabilities of existing programs to expand enrollment and additional graduates from new PA programs. Estimates of supply of PA graduates through the year 2000 are presented under two health care policy scenarios:

SCENARIO #1
Minimal Health Care Reform

Assumes only minimal levels of increased funding support for PA educational programs allowing modest expansion of graduate output.

SCENARIO #2
Health Care Reform

Assumes an increase in levels of funding support as part of ideal health care reform changes allowing substantial increase in graduate output.

2. In 1993, there were 59 accredited PA programs graduating 1700 students. A number of new PA programs are on line to become operational within the next several years. An expected 5 to 10 additional programs could come on line in 1994, with at least 30 more known to be in various stages of development (American Academy of Physician Assistants, 1994; Association of Physician Assistant Programs, 1994).

3. Projections of annual PA graduate output assumes a baseline of $6.3 million in support of PA educational programs in FY 1994; $9 million is authorized for FY 1995. Supply projections assume increases in levels of federal grant support for PA programs beyond FY-95.

4. Supply projections assume an annual 2% attrition rate for PAs. Attrition rate based on observed PA career retention levels (86% in active practice), current mean age of PAs (39 years), factors which affect PA career patterns which include individual desire for academic advancement, PA entry into nonclinical roles such as administration, research, or education, and a variety of other factors known to influence PA career retention (Annual Census Data on Physician Assistants, AAPA, 1993).

EXHIBIT #9

Projected Supply of Physician Assistants 1994-2000

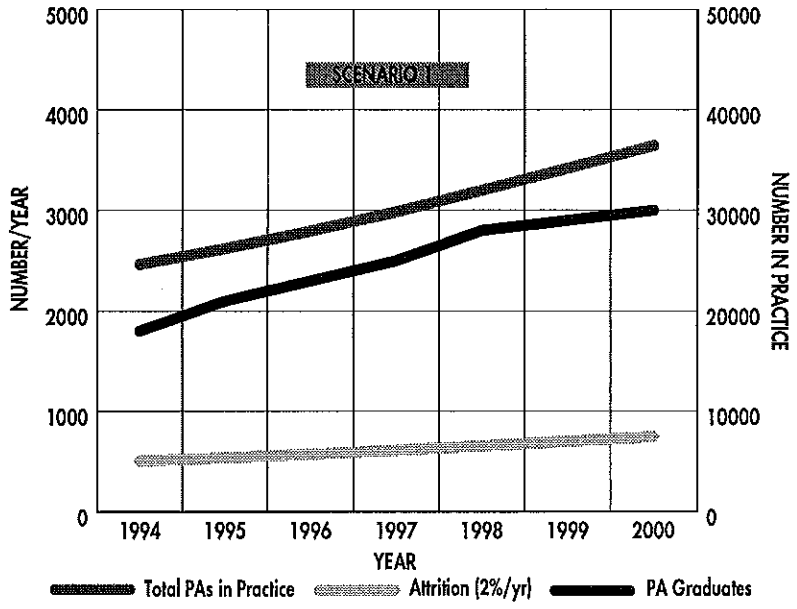


EXHIBIT #10

Projected Supply of Physician Assistants 1994-2000

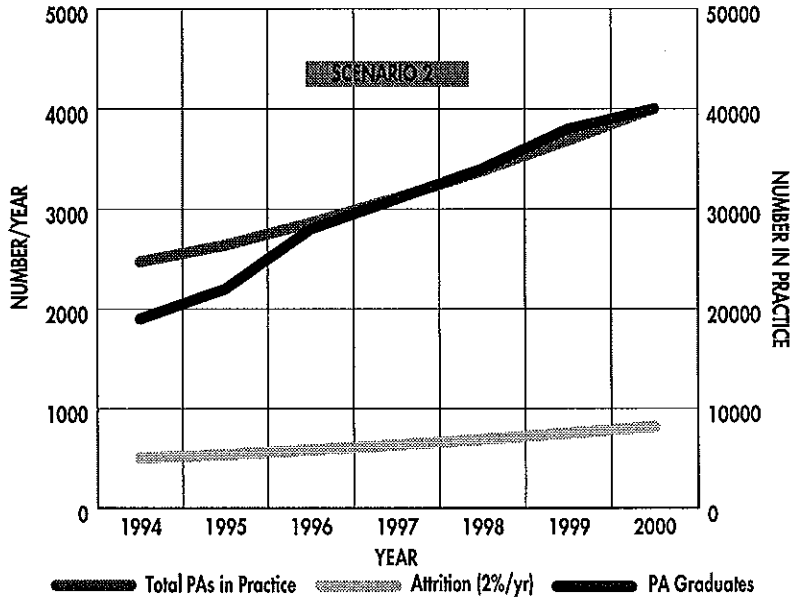


EXHIBIT #11

Projections of Educational Costs and Funding Estimates Required to Increase PA Educational Program Graduates - Under Each Scenario, 1994.

Estimated Total Cost to Educate a physician assistant (Both years)– $17,000 - $18,000*. Total Cost to Educate a physician assistant (direct production costs). Computed as the sum of: (1) direct annual costs reported by PA educational programs (obtained by dividing mean institutional annual educational program budget expenses ($457,000) by the mean number of enrolled PA students (33); data from 51 programs reporting; and (2) adjustment of cost/program/year for indirectly reported educational expenditures, i.e., institutional services such as library availability,or other types of in kind services/educational teaching resources.

Total reported annual direct cost to educate a PA = $13,850/year

Adjustment (estimate) for indirect program services = $4000-$4500/year – includes institutional administrative and overhead costs and faculty instructional costs and other "in kind" services.

Total cost PA education, per program/ year = $ 17,800

SCENARIO #1
Minimal Health Care Reform

Cost to produce the additional 400 PA graduates, from 1993 baseline of 1700, needed to reach Scenario # 1 1995 goal of 2100 graduates and 2300 by 1996; a total of 3000 annual PA graduates by 2000.

1994
1700 graduates from PA programs with federal support; grant awards total $6,650,000**

1995
Baseline Funding, assumes prior year level .. $6,650,000
Cost to educate an additional 400 students @ $ 17,800 per enrolled student/year $7,120,000
Total financing needed to achieve 1995 goal (2100 graduates) $13,770,000

1996
Baseline funding, assumes prior year level ... $6,650,000
Cost to educate an additional 600 students @ $ 17,800 per enrolled student/year $10,680,000
Total financing needed to achieve 1996 goal (2300 graduates) $17,330,000

** Funding appropriated under Title VII authorized grant support for PA educational programs in FY-94.

SCENARIO #2
Health Care Reform-"4000 Graduates by 2000"

Cost to produce an additional PA graduates from 1993 baseline of 1700, needed to reach Scenario # 2 goals of 2200 graduates in 1995 and 2800 in 1996

1994
1700 graduates from PA programs with federal support; grant awards total $6,650,000**

1995
Baseline Funding, assumes prior year level $6,650,000
Cost to educate an additional 500 students @ $ 17,800 per enrolled student/year $8,900,000
Total financing needed to achieve 1995 goal (2200 graduates) $15,550,000

1996
Baseline funding, assumes prior year level . $6,650,000
Cost to educate an additional 1100 students @ $ 17,800 per enrolled student/year .. $19,580,000
Total financing needed to achieve 1996 goal (2800 graduates) $26,230,000

Federal grant support accounts for about 31%(mean per funded program = $143,514) of the total mean annual operating budget of PA educational programs in 1993 ($457,200).

PA EDUCATIONAL COSTS

In comparison to allopathic and osteopathic medical student educational costs, the overall expense of PA training is relatively low. The average total cost for educating an allopathic medical student is estimated to be over $92,000 per year; the average total cost for educating an osteopathic medical student is estimated at $45,600 per year [29]. Findings reported in the Ninth Annual Survey of Physician Assistant Educational Programs in the United States by Oliver gives the average total costs of PA education for PA students. Cost per student averages a total of $18,034 for per student per program, or approximately $9,017 per year. This figure includes the costs to the student for tuition, fees, books and equipment, but not living expenses. Costs to enrolled students varies by program institutional sponsorship (academic health center-sponsored versus non-academic health center-sponsored programs), and by state-mandated assistance. Among the 51 PA educational programs who responded to a 1992 survey conducted by the Association of Physician Assistant Programs, costs averaged $15,694 for in-state resident PA students, and $20,375 for non-state resident students [7]. Mean cost for all enrolled students was $18,034 for both years of PA education [26].

SUMMARY

PAs are educated in competency based medical curricula that emphasizes primary care. The number of PA educational programs has been stable but is expected to increase because of increasing demand for PAs. The federal government provides almost a third of the funds needed by PA educational programs, with most federal grants supporting service to underserved populations. This support will need to increase if projected future demands for PAs are to be met. PA programs, which emphasize primary care, have demonstrated the ability to adapt their curricula in response to social needs.

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The PA Profession

PAs in Clinical Practice:

Their Current Status, Employment Settings, Clinical Specialties, Geographic Distribution, Salaries, and Trends in Patterns of Utilization

CURRENT STATUS

By the end of 1993, approximately 23,350 PAs were in full time active practice in the United States, a number representing about 86% of all persons graduating from a PA educational program. Preliminary data from the 1994 PA Annual Census estimates the number of PAs in practice to be 25,253, with 91% working full time as PAs. (1994 Preliminary Census Report on Physician Assistants, AAPA). Nationally, over 92% of PAs have passed the Physician Assistant National Certifying Examination (PANCE). About 72% hold at least a bachelors degree, 12% have masters degrees, and less than 3% with doctoral degrees. Reflecting the professions' origins, 30% are military veterans [1]. The typical profile of a PA in 1994 reveals a mean age of 39 years (Appendix C), a mean length of time in the PA profession of 8 years, and an average of 4.3% years working in their current position. Women now comprise a growing proportion of the PA profession, representing 42% in 1994, a marked increase from the under 10% in the 1970s. About 34% of PAs practice in communities of less than 50,000 population, with an additional 18% practicing in communities of less than 10,000 population. A bit less than half, 46% in 1994, work in the primary care specialties [1].

PAs serve as commissioned officers in all branches of the U.S. military, including the Public Health Service. Similar to physicians, the racial ethnic proportion within the PA profession does not reflect the distribution of these individuals within the population [2]. In 1993, only 9.3% of all physician assistants in active practice were individuals from racial and ethnic minorities versus 22% of the population representing African American and Hispanic/Latino groups. Of the 9.3% minority PAs, 3.7% are African American, 3% Hispanic/Latino, 1.9% Asian/Pacific Islanders, and 0.7% American Indian/Alaskan Native.

DISTRIBUTION

Initial PA practice distribution patterns tended to reflect the federal and medical sector intent that PAs assume primary care roles in areas of need. Early recruits to the PA profession were often individuals with extensive levels of prior health care experience (i.e., military medical corpsmen, registered nurses), a characteristic contributing to their ability to function in later practice with minimal levels of physician supervision. Among early recruits to the PA profession, a majority of individuals who subsequently completed PA educational programs tended to enter clinical practices in primary care, which usually were located in either a rural or other medically underserved community setting. Despite recent trends observed in the health professions marketplace, PAs are still more likely than physicians to be engaged in primary care specialties (46% versus 32%), and to be working in practices in rural, medically underserved, and primary care areas.

GEOGRAPHIC PATTERNS

The distribution patterns of practicing PAs by state roughly parallels that of the population, with the highest percentages located in New York (13%), followed by California (9%), Pennsylvania (6.5%), Florida (6%), and Texas (5%). Marked differences have been noted among practicing PAs with regard to their patterns of specialty practice and geographic location. PAs in the western states tend to practice in office-based, ambulatory, and rural practice settings, with a concentration within primary care practice specialties. This pattern differs markedly from that observed in the eastern states, where it is far more common for PAs to be employed in clinical practice roles in acute care hospital settings, or in inpatient-related clinical practice specialties. Well over half of all PAs practicing in states such as New York, Pennsylvania, Connecticut, and Maryland are employed in hospital settings.

In recent data obtained from a cohort of over 11,000 practicing PAs, the percentage of those working in primary care specialties in the western U.S. states was 77%, versus 48% in eastern states. Only 13.9% of PAs in western states were working in hospital and institutional settings, compared to 45.5% in eastern states [3]. These practice differences appear to stem from the multiple, sometimes competing, medical marketplace demands that have emerged for PAs in different geographic regions, and are influenced by state PA licensing regulations affecting scope of practice and prescribing authority. Many primary care PAs who are located in medically underserved regions reflect the policy objectives of Title VII training support for PA educational program. Most of these are in western states where practice statutes have less strict physician supervisory requirements than in eastern states; such programs have pioneered in the development of effective mechanisms in the deployment of PAs as primary care health providers who locate in medically underserved communities.

Variation in PA practice patterns and professional characteristics can be seen when survey data from different states are compared. Exhibit 14 showsfindings which compare results obtained from surveys of practicing PAs conducted by their professional organizations in three states (California, Connecticut, North Carolina) and published in state medical professional journals [4-6] (Exhibit 12).

EXHIBIT #12

Selected Professional and Practice Characteristics of PAs, by State Cohort, as Reported in PublishedSurveys

Professional/Practice Characteristic	California (1990)*	North Carolina (1992)**	Connecticut (1984)***
Survey Sample			
Number of PAs in active practice	1782	860	200
PAs Responding N and % rate	641 (36%)	440 (51%)	118 (59%)
Population			
Male	43%	52%	53%
Female	57%	48%	47%
Age (mean)	38 yrs	39 yrs	32 yrs
Caucasian	70%	95%	NR
African American	11%	3%	NR
Hispanic12%	1%	NR	
Other	7%	2%	NR
Nationally Certified (% passing PANCE)	NR	91%	NR
Holding bachelors or higher degree on entry to PA training	58%	69%	68%
Practice Characteristics			
Private Office	56%	43%	19%
Hospital	17%	18%	68%
Ambulatory Clinic	27%	25%	13%
Location in Community Less Than 50,000	NR	32%[1]	2%
Years in Current Position (mean)	3.7 yrs	NR	5 yrs
Specialty			
Primary care +	73%	59%	49%
Surgery ++	NR	25%	23%
Emergency medicine	4%	8%	20%
Other specialties	NR	18%	11%

[1]Represents a decline from the 52% of state PAs working in such practice settings in 1982; VonSeggen, NCMedJ 1984;45:304-308.
+ Includes family practice, general internal medicine, and general pediatrics
++ Includes general surgery and surgical subspecialties
NR = Not Reported

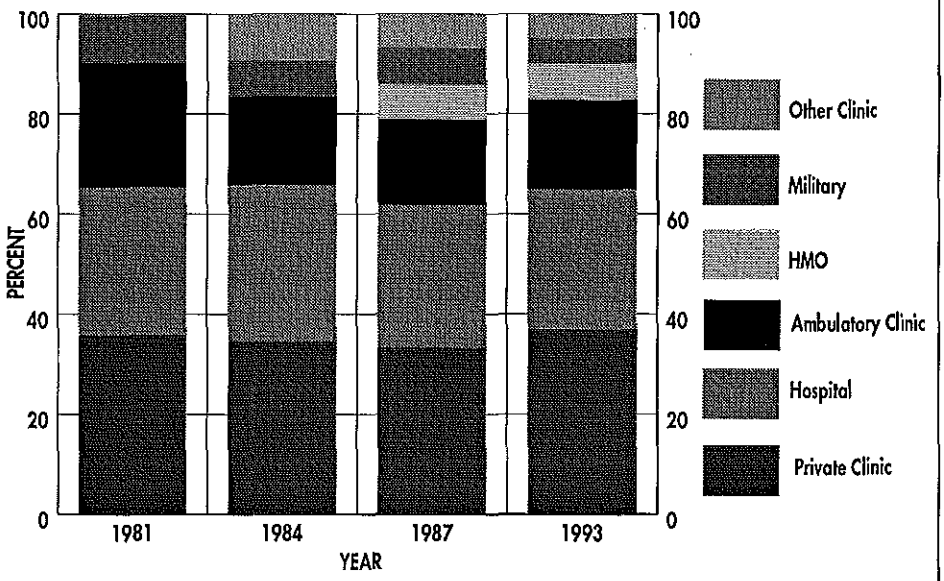
SOURCES: *Fowkes, VK. A Profile of California's Physician Assistants [correspondence]. **WestJMed** 1990; 153: 328-329; **VonSeggen, W., Hinds, A. Physician Assistants in North Carolina, 1992. **NorthCarolinaMedJ** 1993; 54: 276-280; *** Kohlhepp, W., Fichandler, BC, Stasiulewicz, C., Barese, S., Beinfield, M. Connecticut Physician Assistants. **Connecticut Medicine** 1984; 48: 657-660. [4-6]

PRACTICE SETTING

In 1994, the largest proportion of PAs, more than a third (37%), were working in either private solo (10%) or group (27%) office practices. A bit less than a third (28%) of PAs were employed in hospital settings, with the remainder working in a wide variety of clinical settings including health maintenance organizations [HMOs] (7.8%), correctional systems (7.8%), ambulatory clinics (5%), and smaller percentages in geriatric facilities, corporate occupational health settings, the military, VA system, and inner city clinics [1] (Exhibit 13). Patterns of the PA distribution by practice settings have shown stable trends over the past decade (Exhibit 14).

EXHIBIT #14

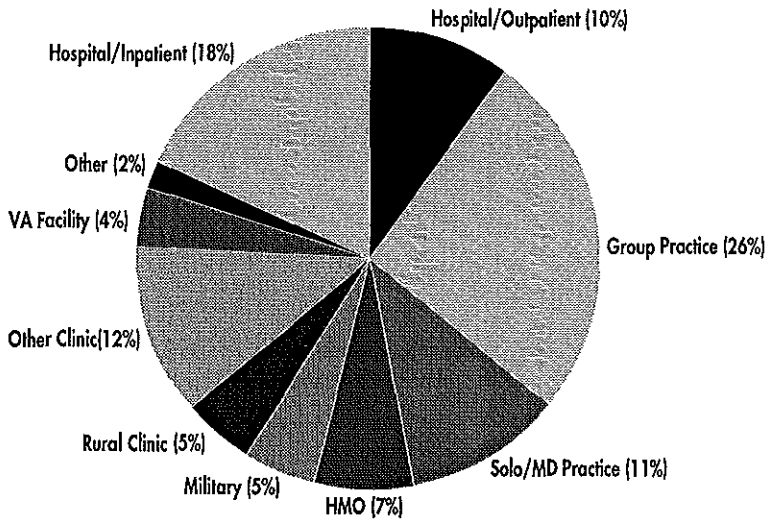
Distribution of Physician Assistants by Practice Settings 1981 - 1993



SOURCE: Division of Medicine, Bureau of Health Professions

EXHIBIT #13

Distribution of PAs by Practice Setting



SOURCE: Annual Census Data, American Academy of Physician Assistants, 1993

PAs IN PRIMARY CARE

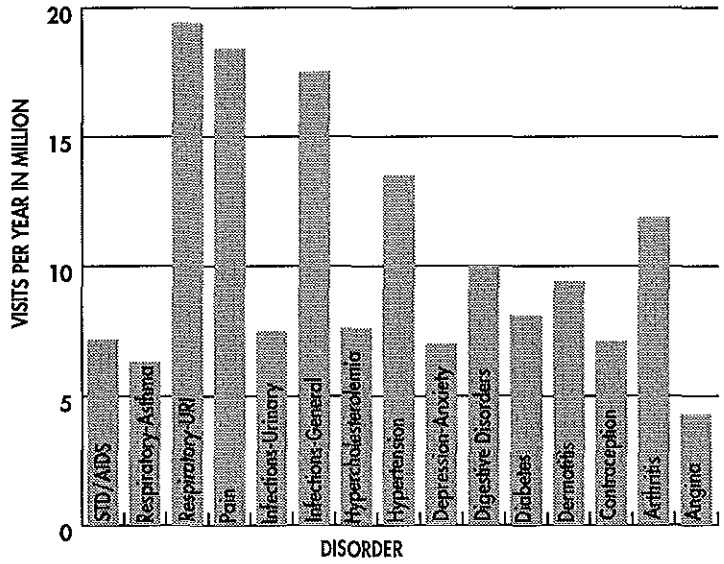
Although 46% of PAs are in practice in the federally-designated primary care specialties, it is argued that many primary care services are also provided by PAs working in primary care-related clinical areas, even in such clearly defined specialties as surgery. If emergency medicine (8%) and women's health care (3%) are included as primary care specialties, a majority (56%) of actively practicing PAs are engaged in primary care clinical activities. The primary care orientation of PAs enables them to handle a wide range of the clinical problems commonly encountered in primary care settings (Exhibit 15).

PAs are commonly used in roles as primary care providers in solo and group private medical practices, by HMOs and managed care systems, and a wide variety of other health facilities. PAs are also being increasingly incorporated on clinical staffs as primary care/generalist care providers in:

- ❑ Multi-specialty group practices expanding primary care service delivery
- ❑ HMOs expanding primary care service capacities
- ❑ Private rural systems of care delivery and small community hospitals seeking to extend ambulatory care/primary care services
- ❑ Public health clinic settings; C/MHCs, rural health clinics
- ❑ Clinical settings where PAs may provide clinical preventive services i.e., wellness/preventive care
- ❑ Geriatric facilities
- ❑ Occupational/worksite health settings
- ❑ Correctional health systems
- ❑ University/college student health facilities.

While PAs have an effective track record in primary care, it remains a challenge for practices to attract enough of these providers to rural and other needy areas [7-8].

EXHIBIT #15
Number of Patient Visits to PAs by Disorder/Comon Diagnosis



SOURCE: American Academy of Physician Assistants, 1994

MILITARY/FEDERAL AND STATE PUBLIC SERVICE

Presently, about 17% of all PAs, or about 3900, are employed in positions within the public sector. Among PAs reported in the AAPA Annual Census, 11.6% are employed in the federal sector, with 3.9% in state, and 2.3% in local government agencies. Currently, about 1,350 (5.7%) of PAs serve in the Department of Defense in all uniformed services branches, including 2% each in the Army and Air Force, 1.4% in the Navy, 0.1% in the Coast Guard (Department of Transportation); 3.8% are employed in the Department of Veterans Affairs (VA) health system, 0.5% serve in the Department of Justice in the Bureau of Prisons (BOP) medical system, and 0.4% within the Indian Health Service (IHS) and other agencies in the U.S. Public Health Service (USPHS) [1,9].

The overall number of PAs employed by the VA system (925) has increased from 1986 (717) and 1988 (869) levels. PAs in the U.S. military hold commissioned officer status, and in 1992 there was a vacancy rate of over 300 PA positions. PAs are also recruited for career positions serving in the USPHS and BOP, where limitations in the available supply of PAs continues to cause ongoing vacancies

in medical staffing these agencies. For example, the IHS at present employs 98 FTE PAs, and reports 60 unfilled positions. Both the IHS and federal agencies like BOP anticipate that medical staffing requirements for PAs will increase substantially in the coming years. In 1992, BOP had 550 positions for PAs in its health system and projects that requirements for PAs will rise to 1,100-1,200 over the next five years [9].

PAs IN RURAL PRACTICE

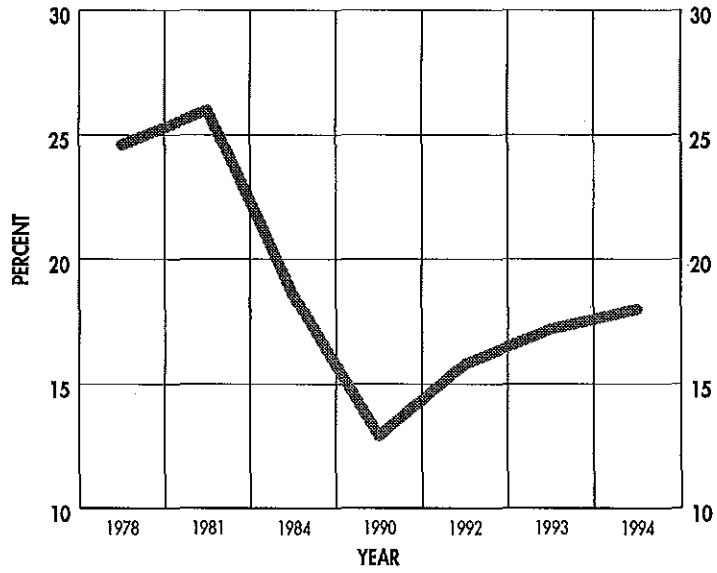
In 1993, about 18% of PAs were in practice in communities of less than 10,000 population, with an additional 17% working in communities of between 10,000-50,000 population. Thirty-four percent of PAs are working in communities of less than 50,000, a greater percentage than either allopathic physicians (12%) or osteopathic physicians (15%) [1,2,10]. Since the late 1970s, federal statute requires PA programs receiving grant support to emphasize primary care in their curricula. Programs that demonstrate successful outcomes in deployment of graduates in primary care practices and in medically underserved areas have promoted PA practice in rural communities [11,12].

Until recently, a downward trend in the percentages of PAs practicing in small communities (less than 10,000 population) had been observed. Between 1981 and 1989, the percentages of PAs working in smaller communities declined from 27% to 13% (Exhibit 16). Factors responsible for this decline include a changing medical market and a changing demography of the PA profession. Since nearly all rural PAs (defined as those practicing in communities of less than 10,000 population) are employed by primary care practices (86.6%), trends away from both primary care and rural practice have been affected by the retirement of older male PAs (who were more likely than women to enter practices in underserved areas), the increasing proportion of women now in the profession (42%), and the increasingly strong demand and consequently higher remuneration levels offered in urban settings and in specialty and hospital-based practices. The same negative factors that discourage physicians from working in rural areas also affect PAs, i.e., large patient care load, long hours, professional and social isolation, fewer academic centers, and lower incomes. However, since the 1989 low of 13%, the percentage of PAs working in communities under 10,000 population has increased; in 1992 the figure rose to 16.5% and in 1993, to 18% [13]. The effect of federal PA funding preferences in grants for PA educational programs is believed to have offset to some degree the national trend among health professionals away from rural practice [14].

EXHIBIT #16

PA Trends in Rural Practice Settings

Communities Under 10,000 Population



Many PAs are in practices in isolated rural areas where they are supervised by physicians through telephone contact and regular on-site visits. These PAs function with considerable independence. Many rural communities are dependent on a PA-staffed clinic to provide local medical care. Physicians in rural communities rely on PAs to help balance patient care duties, on-call responsibilities, and leisure time, and to help avoid problems of social and professional isolation. PAs are cost effective in most rural practices since their salaries are about one-third of those of physicians, and evidence shows that most perform at productivity rates well over two-thirds of those of physicians.

C/MHCs

PAs are filling important roles in service to medically needy populations in rural communities. Shi, Ricketts, and colleagues from the University of South Carolina examined the patterns and determinants of utilization of PAs, NPs, and CNMs practicing in rural C/MHCs in all U.S. geographic regions. The primary objective of the study was to compare centers that employed PAs, NPs, and CNMs in 1991 with those not employing such providers. Data from 243 of 278 (86%) responses received from rural C/MHCs related to the utilization of PAs, (as well as NPs and CNMs). Among 243 C/MHCs, 77% indicated that these health professionals were included on their medical staffs. Also, 85% indicated that they were seeking to employ additional PA and NP health providers. The report projects that in order to meet anticipated demand for primary care providers, C/MHCs would need to hire 726 physicians, 315 NPs, 218 PAs, 145 CNMs, and 169 other staff [15]. A major factor in the utilization of PAs, NPs, and CNMs in rural C/MHCs has been shown to be whether these facilities are affiliated with an educational program that trains these providers. High proportions (77% for PAs, 67% for NPs, and 93% for CNMs) of the rural C/MHCs surveyed nationally are involved in such training. Findings suggest that the centers that actively seek to employ PAs, NPs and CNMs are more likely to establish training and employment channels with educational programs.

In their roles working in primary care in rural C/MHCs, PAs, NPs, and CNMs tend to function in roles which are largely substitutive of the physician. This conclusion is supported by the finding in this study of a significant and inverse relationship between the number of physicians and the number of other health care professionals employed in these settings. Other findings included a significant positive relationship between the number of total staff and the number of PAs, NPs, and CNMs [16].

HMOs/MANAGED CARE

PAs as well as primary care physicians will be in stronger demand in HMOs and managed health care systems. Preliminary data from the 1994 Annual Census on Physician Assistants indicates that only 7.8% of PAs reported working in an HMO setting [1]. This figure seems low however, and may well be an underestimate the true number of PAs utilized in managed care systems due to underreporting as the reporting form used in the survey does not list subcategories of managed care systems such as independent practice associations (IPAs) and preferred provider organizations (PPOs). While PA utilization has been slow to catch on in some HMO systems, the clinical staffs of many of these organizations now commonly consists of a mix of physicians, PAs, NPs, and CNMs. Estimates of current utilization levels of PAs in HMOs/managed care organizations show that among selected sites, there is a wide range of the numbers of both PAs, as well as NPs, employed in HMOs per 100,000 enrollees. Weiner derived a consensus estimate from three HMOs in the mid 1980s and found that there were 27 PAs and/or NPs employed per 100,000 HMO enrollees [17]. Using updated data, Weiner in 1993 estimated the mean figure to be 18 PAs and/or NPs per 100,000 HMO enrollees, with a range between 0 to 69 per 100,00 enrollees[18]. Hooker in 1993 found 23.3 per

100,000 enrollees (range 15 to 30.3 per 100,000) in three Kaiser plans [19]); a 1992 survey of 10 Group Health Association of America (GHAA) member HMOs the mean was 14 NPs and PAs per 100,000 enrollees with a range of 0 to 37 [20].

Examples of systems with the integration of PAs into HMO staffing can be seen at Kaiser Permanente Northwest in Portland, Oregon. Kaiser Northwest is a well-established HMO with an enrollment of over 380,000 members and staffed by 520 full-time equivalent (FTE) physicians and 150 FTE PAs and NPs within 29 clinical departments. PAs practice in both primary care areas as well as in specialty care roles, and are fully integrated as members of the health provider team [19]. PAs are also utilized extensively in other major HMO systems including Kaiser Permanente systems in other western regions (the Southern California Kaiser Plan employs roughly 500 PAs and NPs); Harvard Community Health Plan in Boston, Health Insurance Plan of Greater New York, Group Health Association and The George Washington University Health Plan in metropolitan Washington, DC, the Mayo Clinic in Minneapolis/St. Paul, Group Health Cooperative of Puget Sound in Seattle, and the FHP Health Care systems in Utah, California, and other western states. The majority are employed in primary care roles.

CLINICAL STAFFING

Three models of clinical staffing arrangements utilizing NPs and PAs are observed in HMOs and managed care settings:

1. **Traditional** model where the NP of PA is assigned to a physician or team of physicians and perform delegated medical diagnostic tasks; NP/PAs usually do not have initial contact with the patient and assignment is designated by physicians;

2. **Team** model where primary care physicians and NP/PAs collaborate in the care of the patient. While patient assignment is given to a physician, the NP/PAs shares in the care delivered and at times see the patient without supervision;

3. **Panel** model where patients are assigned to either a primary care physician or an NP/PA who assumes principle responsibility for the general care of the patient.

The 1994 report of the Physician Payment Review Commission (PPRC) contains findings from a recent RAND-conducted study of PA and NP utilization, practice activities, and professional interrelationships in selected managed care organizational settings (5 large HMOs and 3 multispecialty group practices). One feature of HMO/managed care system staffing structure found consistently across study sites was that the specific practice roles of individual PAs were quite variable and decentralized. The medical care duties assigned by physicians (the style of physician task delegation /division of medical labor) was determined primarily at the clinic/ department level [21]. This observation confirms prior research findings suggesting that there is a wide variability in physician delegation styles in using PAs and that physician delegation skills are critical elements in their practice effectiveness and clinical productivity [22].

The RAND study also surveyed PAs and NPs regarding their professional roles and found that while PAs and NPs perceived themselves to be distinct types of health providers, opinions of their roles expressed among physicians and administrators confirmed past research findings that in HMO/ managed care setting, and perhaps other primary care/ambulatory practices as well, PA and NP clinical roles are largely interchangeable [21].

PA PERFORMANCE IN MANAGED CARE

The clinical performance levels of PAs utilized in HMOs/managed care settings have been shown to approach levels of primary care physicians. Record first documented that PA clinical productivity rates in HMO/

managed care settings compared favorably with rates of primary care physicians and determined that, when these health professionals were utilized to their maximum capacity to perform medical services consistent with educational competency and legal scope/supervision, and assuming an equal number of hours worked/day and week with physicians, the ratio of MD substitution was 76% [23].

More recent research data on PA utilization in a managed care system (a large staff-model HMO) reveal that PA clinical productivity rates, as measured by the overall number of ambulatory patients seen per/day and per/week, roughly approximates or exceeds the number of patients seen by primary care physicians.

The clinical potentials and cost-effectiveness of PAs in managed care settings are receiving increasing attention. PAs and other nonphysicians have proven to be capable of delivering a sizable portion of the health care services required of primary care providers in managed care settings and do so at levels productivity equal to physicians and with physician-equivalent outcomes, quality of care, and patient satisfaction [19].

EXHIBIT #17

PA Clinical Productivity in an HMO Setting

Department	Patients/Hour	Patients/Day
Family Practice		
Physicians	2.39	17.4
PAs	2.61	19
Internal Medicine		
Physicians	3.10	22.5
PAs	2.97	21.5
Pediatrics		
Physicians	3.14	16.5
PAs	3.07	22.3

SOURCE: Hooker, RS. Kaiser Permanente Health Research Center and Kaiser Northwest, Department of Medical Economics, Portland, Oregon, 1993.

A CASE STUDY

Physician Assistant Utilization in a Managed Care System –Family Health Plan of Utah

Family Health Plan, Inc. (FHP) is a large staff-model managed care system founded in 1961 which provides medical and dental services to over 870,000 members in Utah, California, Arizona, New Mexico, Colorado, Texas, and several Pacific territories. Services to enrollees include ambulatory care, acute inpatient hospital care, and specialty services. FHP components include independent practice associations (IPAs), preferred provider organizations (PPOs), plans offering indemnity health insurance, and contracts with Medicare in delivering health services to elderly citizens. FHP contracts with over 8,00 private physicians and 120 hospitals to provide services. Its clinical staffing consists of 800 physicians, 200 dentists, and over 5000 other health professionals, including NPs, PAs, and registered nurses. FHP facilities in Utah and California employ more than 90 PAs and NPs with a current PA/NP ratio of 4:1. PAs provide primary care services at 6 ambulatory care facilities in Utah and 19 in California. PAs and NPs are used primarily in family practice, pediatrics, and urgent care settings.

Physician/Nonphysician Staffing Ratios, FHP Utah, 1994

Clinical Area	Numbers of Providers MD	NP	PA	PA/N-MD
Family Practice	33	1	18	1:1.8
General Surgery	6	0	2	1:3
Internal Medicine	31	0	1	1:30
Orthopedics	6	0	2	1:3
Pediatrics	17	4	4	1:4.3

The staff-model system in FHP in delivering primary care services calls for patients to either choose or to be assigned to panels (the **Panel** model) which designates their primary health provider (which may be either a physician or PA/NP). A typical panel for a PA comprises about 900 patients, one-half the number assigned to primary care physicians. First time patients in FHP facilities or offices seeing a PA are given a small booklet explaining the role of the nonphysician provider, and describes their educational credentials, authorized scope of practice, and types of tasks performed. Experiences in patient acceptance of NP/PAs has been most positive with a majority of these providers reaching or exceeding target numbers of "paneled patients", i.e., those who designate the PA as their primary care provider.

Both PA, as well as NP practice activities take place under system-wide written protocols developed by supervisors and physicians which are specific for each clinical practice area. Patient visits are typically scheduled at 15 minute intervals with an average of 3 patients seen per hour. The remaining time is for PA-MD consultation and telephone calls. Regular records are kept on the frequency of laboratory use of all providers, the types of medications used, utilization patterns of radiological services, and a total of all services delivered expressed in fee-for-service equivalents. While their total patient panel is less than physicians, PAs are expected to be as clinically productive on a patient visits per day basis as physicians. Both FHP physicians and PAs see an average of approximately twenty scheduled patients, as well as a variable number of urgent or "walk-in"patients in the course of a normal day. Provider productivity (both physician and nonphysician) is monitored on a monthly basis recording data on provider numbers of patient visits per unit time worked [24].

QUALITY AND CONTENT OF PA CARE

While patient satisfaction is an important but imperfect measure of health provider quality of care, it is a factor in the utilization of health personnel. The proliferation of PA roles in medical practice observed over the past two decades has been in part a function of practice efficiency and economic advantages, but also of high degrees of patient satisfaction with care provided by PAs.

A high level of patient acceptance of PA services has been a consistent finding in many of the health services research reports published in the years after PAs were introduced into clinical practice [25]. In a number of these studies, the proportion of patients reporting acceptable to high levels of satisfaction with health care services delivered by PAs averaged between 80% to 90% among individuals not previously exposed to PA care, subsequently rising to 90% and over 95% among patients surveyed after receiving care from a PA [26].

Public acceptance and familiarity with PA health providers has grown substantially, particularly over the past decade. Data from a recent report based on findings from a random sample of 687 adults surveyed by telephone in the Kentucky Health Survey indicated that 1 in 4 (25%) had received medical advice or treatment from a PA within the past two years. More than 90% of these subjects reported satisfaction with the care they received. Recipients of care from PAs did not differ from nonrecipients with respect to income, education, insurance status, self-assessment of health status, or rural versus urban location [27].

Sox summarized data from more than a dozen well conducted studies examining the clinical performance of PAs (and NPs) and found that the quality of patient care delivered by these providers when utilized in primary care, ambulatory-based practices was at a level "indistinguishable" from that of physician care [28]. The quality of care

provided by PAs was also assessed in primary care clinics of the U.S. Air Force, where PAs were delivering a considerable portion of primary care formerly provided by physicians. Quality of clinical care determinations were made on the basis of responses to predetermined diagnostic, therapeutic, and referral/disposition criteria. Therapeutic criteria included desirable actions on the part of the health care provider (i.e., prescribing the appropriate class of antibiotic for infectious otitis media at the first visit), and undesirable actions (e.g., prescribing an antibiotic for viral syndrome with gastroenteritis). On five of six such criteria, PAs performed as well or better than physicians in identifying desirable therapeutic actions [29].

Record and colleagues compared the clinical performance of PAs and primary care physicians in a large HMO in handling episodes of four specific morbidities: strep throat, upper respiratory infection, bursitis, and bronchitis. One outcome criterion was patient safety, measured as the rate of adverse side effects from antibiotics or other drugs used in patient management. Over a period of one year, no difference in rates between PAs and physicians was observed [30].

Kane reported a study comparing the quality of clinical care delivered by PAs (MEDEX) to that provided by their employing/supervising physicians. Findings revealed that PAs were less likely than supervising physicians to use antibiotics in a manner judged to be inappropriate (i.e., for fevers of undetermined origin or viral upper respiratory tract infections) and to be somewhat less likely to use systemic steroids for conditions such as contact dermatitis or asthma, suggesting that the patient care management decisions for these morbidities by PAs were as good or better than those of physicians [31]. In another study, Wright, Kane, and colleagues compared the clinical performance of several types of providers of primary care clinical services by recording decision patterns and outcome aspects of treatment by family practice residents, faculty, and PAs (MEDEX) within two clinics staffed by health care professionals in a university family practice residency program. Activities measured in the study included patient functional outcomes, satisfaction of patient, and mean cost per episode of care. Findings revealed that PAs performed as well as or better than other primary care providers in delivery of services in each of the end point measures [32]. In another study, Dutera and Harlan evaluated the appropriateness of patient care provided by PAs in 14 rural primary care settings and concluded that PAs were clinically competent, in both diagnostic and therapeutic skills, as judged by performances observed in three specific practice circumstances: (1) when all patients were initially seen by the PA and then by the physician; (2) when patients (not preselected) were managed concurrently by physicians and PAs; and (3) when patients with specific problems were assigned to PAs [33].

CLINICAL PREVENTIVE SERVICES/PHYSICIAN COMPLEMENTARY SERVICES

In addition to their proven abilities to handle safely and effectively a wide range of commonly encountered medical problems in ambulatory practice, PAs are also able to provide health services that are complementary to those provided by the physician. PAs, as well as NPs and CNMs, have been shown to be better suited than physicians to performing certain types of clinical tasks such as health education, behavioral counseling, and management of patients with certain chronic diseases. PAs have also been shown to be attentive to including clinical preventive services in their patient encounters [25].

HOSPITAL PRACTICE

While PA education emphasizes roles in primary care, PAs have adapted readily to clinical inpatient roles. Cutbacks in some physician residency (GME) programs, cutbacks, the one-time curtailed availability of IMGs, and reports of positive experiences in major centers, were key factors in inpatient institutions to employ PAs serving in lieu of physician residents [34]. PA utilization in inpatient care roles in a wide variety of hospital settings has now become commonplace. PAs work on services within major teaching hospitals, medium and small community and rural hospitals, and other types of inpatient care institutions [35].

Currently, about 29% of clinically active PAs, roughly 8,200 providers, are employed in full-time practice in inpatient care settings. Based on a sample of 1,690 PAs employed in hospital settings who responded to a recent national survey, 45% identified themselves as, or held job titles of as "PA house staff." The remaining PAs worked in primary care or ambulatory care departments, community outreach clinics, the hospital employee health center, or the emergency department [36]. In the survey, over 90% of responding PAs indicated holding formal medical staff privileges under hospital bylaws. A high percentage have formal written position descriptions and are permitted to write diagnostic and therapeutic orders within the institution. PA practice in hospitals tends to be specialized with 19.4% working in surgical subspecialties, 18.6% in medical subspecialties, 14.8% in emergency medicine, and 9.5% in general surgery.

The 1992 National Hospital Ambulatory Medical Care Survey conducted by National Center for Health Statistics showed that among eight types of clinical providers included in the survey, PAs handled about 2% each of 89.7 million hospital emergency department visits, and 56.6 million outpatient clinic visits [37,38]. PA utilization in inpatient roles in many institutions has demonstrated competence and efficiency. Published reports attest to successful experiences in PA utilization on inpatient internal medicine [39], surgical and surgical subspecialty [40-41], and pediatric services [42]. In addition, PAs have also been found effective and are employed in critical care units [43]; on subspecialty services such as diagnostic radiology [44]; and emergency departments [45-46]. The addition of PAs to hospital medical staffs has resulted in high levels of acceptance by employing physicians and patients, a favorable cost-benefit margin to the institution, and maintenance of high levels of patient care quality [47,48].

Among the first hospitals to utilize PAs to augment inpatient medical and surgical house staff was Montefiore Medical Center (Bronx, NY). Montefiore founded the concept of the PA as resident on inpatient services and began the first PA postgraduate residency program in surgery. More than 20 years ago, Montefiore hired PAs to serve as house staff on surgical wards, then to help offset reductions in physician resident numbers. Currently, the institution employs over 150 PAs, not only in surgical care areas, but also in internal medicine, the medical subspecialties, emergency medicine, obstetrics and gynecology (OB/GYN), on organ transplant services, in burn care and surgical subspecialty units, as clinicians in the employee health center, and in a broad range of hospital administrative/education/research roles [48]. Montefiore has pioneered in the adoption of effective and creative medical staffing approaches using PAs, and in developing the concept of PA postgraduate clinical specialty education; Montefiore's PA surgical residency program is highly regarded, and the concept has been utilized in affiliate hospitals in other clinical disciplines, i.e., OB/GYN [49].

Another institutional model where PAs are utilized in a wide range of hospital-based roles can be seen at Geisinger Medical Center located in rural northeast Pennsylvania. In this tertiary care hospital, as well as in many other institutions, PAs have demonstrated clinical versatility serving in both primary care specialty areas as well as in specialty roles. PAs were first added to medical staffing at Geisinger in 1973 and their utilization

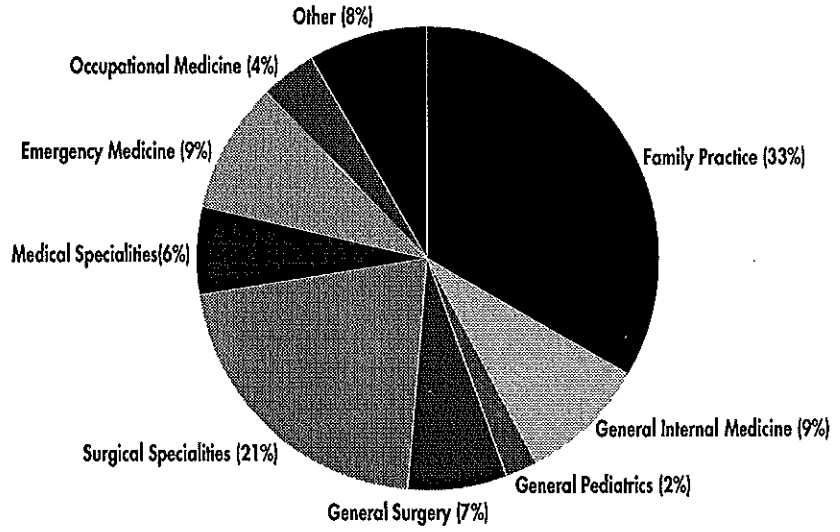
has flourished since then with over now 110 employed full time. Geisinger is a large (577 bed) referral center where PA roles span a wide range of clinical departments: these include primary care roles family practice and pediatrics in outpatient and affiliated ambulatory clinics, roles on inpatient specialty services such as cardiovascular surgery, orthopedics, urology, and neurosurgery; and utilization in internal medicine and cardiology. Geisinger also utilizes both PAs and NPs to staff family medicine clinics, the emergency department, other surgical subspecialties, in neonatology, physical medicine and rehabilitation, and as providers in employee health clinics.[48].

PAs IN SPECIALTIES PRACTICE/SUBSPECIALTY AREAS

The proportion of PAs working in specialty areas is growing and now encompasses more than half the profession. The percentage of PAs in primary care as noted was 46% in 1993, down from 57% in 1980 (Exhibit 18). Over the past decade, as the percentage of PAs working in primary care specialties has declined since 1981, the percentage of PAs employed in the surgical subspecialties increased threefold from 7.7% to 21.7% in 1993 (Exhibit 19) [1]. PA utilization in subspecialty practice areas has expanded considerably over the last few years and is likely to continue, particularly as PAs are used in roles where they substitute for a portion of a physician resident. Specialty areas expected to remain strong in demand for PA services include emergency medicine, cardiovascular surgery, orthopedic surgery, and the internal medicine subspecialties; the variety of PA specialty roles is shown in Exhibit 20.

This trend raises several policy issues. With relatively small numbers of PA graduates being produced at present, significantly expanding requirements for PAs in house staff and/or subspecialty roles could divert these providers from filling needed roles in primary care practices, particularly in rural areas and medically underserved settings. Neither PA educational programs nor teaching hospitals at present have incentives to provide or participate in the clinical education of PAs in specialty or inpatient care areas. It may be difficult for the PA educational programs who's curricula is focused on primary care preparation to expand adequately numbers of PAs to serve in both primary care as well as inpatient hospital/specialty practice roles, may run counter to federal and state health workforce policy directions to increase primary care providers.

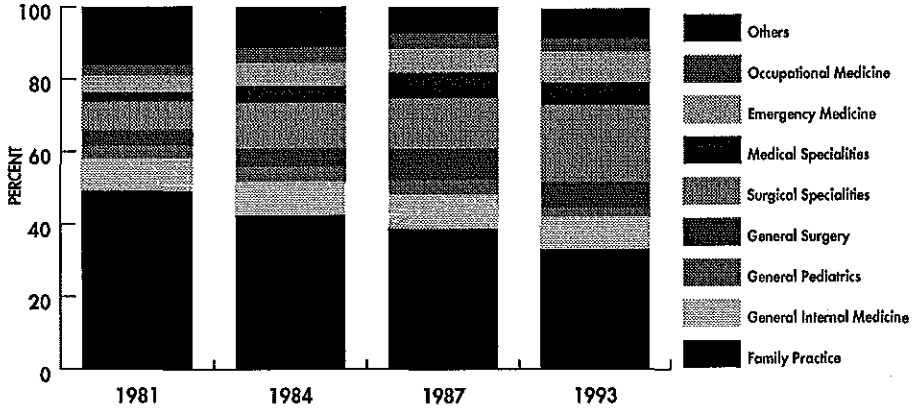
EXHIBIT #18
Distribution of PAs by Speciality



SOURCE: Secondary Analysis. The1981 National Survey of Physician Assistants, Association of Physician Assistant Programs, 1984; The 1984 and 1987 Masterfile Survey of Physician Assistants, American Academy of Physician Assistants,1985 , 1987; Oliver, DR. Eighth Annual Report on Physician Assistant Educational Programs in the United Sates, 1991,1992; Alexandria , VA: Association of Physician Assistant Programs. American Academy of Physician Assistants, General census Data on Physician Assistants, 1993.

EXHIBIT #19

Distribution of Physician Assistants by Speciality
1981 - 1993



SOURCE: Secondary Analysis. The1981 National Survey of Physician Assistants, Association of Physician Assistant Programs, 1984; The 1984 and 1987 Masterfile Survey of Physician Assistants, American Academy of Physician Assistants,1985 , 1987; Oliver, DR. Eighth Annual Report on Physician Assistant Educational Programs in the United Sates, 1991,1992; Alexandria , VA: Association of Physician Assistant Programs. American Academy of Physician Assistants, General census Data on Physician Assistants, 1993.

EXHIBIT #20

Clinical Subspecialties Utilizing PAs

anesthesiology	plastic surgery/burn care
cardiothoracic surgery	oncology/pediatric oncology
neurosurgery	gastroenterology/endoscopy
emergency medicine	pediatrics/neonatology
critical care medicine	pediatric surgery
invasive cardiology	physical medicine/rehabilitation
interventional radiology	orthopedics/sportsmedicine
urology	preventive medicine
occupational health	forensic medicine/pathology
ophthalmology	hematology/oncology
organ transplant	clinical research
substance abuse/psychiatry	allergy/dermatology
rheumatology	pulmonary medicine
otolaryngology	dermatology

SOURCE: Schafft, GE, Cawley, JF. Physician Assistants in a Changing Health Care Environment. Rockville, MD: Aspen Publishers, 1987.

NONCLINICAL ROLES

About 15% of all individuals who have graduated from PA educational programs are no longer in full-time clinical practice as PAs [1]. Most of these PAs still work within the PA profession or in the health care field but are not directly engaged in providing clinical services. Many of these individuals represent PA program faculty (N = 226), a sizeable portion of whom (70%) maintain part-time (average of 10 hours/week) clinical practices in addition to their educational duties; 62% of PA program directors remain in clinical practice [3]. As shown in Exhibit 21 some PAs have combined their years of clinical experience and expertise with graduate degrees in public health administration or education and have taken roles in health services management, public health, research, or health policy [49]. About 4% of all persons trained as PAs have become either allopathic or osteopathic physicians [47, 49].

EXHIBIT #21

Nonclinical Roles of PAs

PA educational faculty/administration	Pharmaceutical representative
Health services research/health policy	Public health officer
Academic teaching/researcher	Medical epidemiologist
Health services administration	Forensic scientist/legal expert
Health facility owner/entrepreneur	Medical editor/publisher
PA service/house staff administrator	Health planner/regulator
Health information management	Health insurance management
Hospital administrator	Professional medical recruiter

SOURCE: Schafft, GE, Cawley, JF. Physician Assistants in a Changing Health Care Environment. Rockville, MD: Aspen Publishers, 1987.

SALARY TRENDS

Demand for PAs remains strong in both primary care and specialty settings and salaries have risen accordingly. In 1990, the mean salary was $40,047; in 1993, it was $52,843. This figure includes PAs in all practice settings and specialties and excludes fringe benefits and part time income. When adjusted for an inflation rate of 3.4%, the 9.7% increase in PA salary over the past three years represents a real wage growth of 6.3% per year. Preliminary data from the 1994 PA Census shows a continuation of this trend with a rise in PA salary to a mean of $56,000 [50].

PAs employed in surgical specialties tend to earn higher salaries (mean of $5000 more) than primary care counterparts. Surgical PAs comprise those at the top of the pay spectrum, and in 1993 averaged $60,800 per year [1]. The distribution of PA salaries is quite broad, ranging from a low of $15,000 or less to over $100,000 per year (Appendix D).

The mean net income for all active physicians in all settings and specialties in 1992 was about $160,00; the comparable average figure for PAs was a little over $50,000 per year - or roughly one-third the salary of physicians. The MD - PA income ratio is roughly at proportionate levels (one-third to one half those of physicians) among those in the primary care practice specialties, but become quite disproportionate (greater than four to five times higher) among physicians in specialties and subspecialties. Salaries for women PAs, even after controlling for critical variables such as specialty, number of years in practice, number of patient visits per week, and number of hours worked per week, tend to average about $5,000 less than those of their male counterparts. About 20% of female PAs hold part-time clinical positions [51].

JOB SATISFACTION/ ATTRITION

Job satisfaction for PAs is highly correlated with their level of clinical responsibility and professional autonomy, the extent of professional and personal support provided by their supervising physician(s), and their opportunities for career advancement. The majority of studies addressing the job/career satisfaction of PAs reveals that they are largely satisfied in their professional roles and quite happy with their career choices, a finding a bit surprising in view of the dependent practice stance of PAs [52].

Recently, Holmes and Fasser studied occupational stress and professional retention in a mail survey of 1,360 randomly selected, practicing PAs. Usable questionnaires were returned by 58.2% of those surveyed. The typical respondent was male (53%), white (88%), age 37 (mean), and devoted most work time to patient care activities. Respondents' job satisfaction was high overall and was

correlated positively with independence, challenge, and job security. Issues of salary, perceived opportunities for advancement, and the management style of the employer were associated with the highest levels of job dissatisfaction and role stress [53].

RISK MANAGEMENT

PAs typically limit their own and their supervising physicians' malpractice liability risk by either: [1] obtaining their own malpractice insurance policy coverage (premium costs range from $1,500 to $3,000 per year by state), or [2] by purchasing a rider on the policy of the physician covering the practice activities as PAs. There is evidence and opinion among health insurance carriers confirming the low number of negligence suits filed involving PAs over the past 20 years across a wide spectrum of clinical practice settings and specialties [54]. Although not proven, many medical practices believe that the employment of PAs actually lessens malpractice risk liability given that PAs are known to provide care with improved patient communication and proper documentation, and since poor communication or documentation frequently prompts malpractice lawsuits, utilization of a PA can serve to mitigate practices' medical liability risk.

SUMMARY

The PA profession, although relatively young, is increasing in size. There is very low attrition from the profession. PAs are distributed across all practice specialties. PAs in the western states are more likely to practice in primary care settings, whereas in eastern states over half of PAs practice in hospitals. PAs are filling important roles in rural communities, and their utilization in HMOs and managed care settings is expected to increase. Studies have shown that PA health care is of high quality and satisfactory to their patients.

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Economic Aspects

PA Cost Effectiveness, Payment and Reimbursement, Obstacles to Effective Utilization

The cost to society of educating and utilizing PAs and similar health care providers, relative to their respective levels of education, legal practice capabilities, and level of compensation, is far less than for physicians. Analyses of the political economic aspects of the utilization of PAs, as well as NPs and CNMs, indicate that these providers appear to be underutilized in health care delivery, and are often limited in their potential to contribute to health delivery [1-2]. Theoretical economic projections of the cost savings that could accrue under optimal conditions of PA and similar provider utilization are considerable, perhaps as much as $4 to $5 billion annually [3-4].

COST EFFECTIVENESS

Reinhardt was among the first to describe that physicians who practiced in groups could see more patients than those who were working in solo practices. He noted that physician medical services delivery exhibited measurable *economies of scale*; that is, patterns showing that mean levels of clinical productivity for professionals working in the practice tends to increase total practice productivity as more personnel who provide services of a portion(s) of a physician are added [5].

Later, health research findings related to the utilization of PAs and similar providers suggested that organizational setting and physician task delegation style was closely linked to productivity cost benefit. Scheffler documented that PAs employed in institutional settings are more productive than those in private practice in that they see more patients in the same period of time [6]. Record and colleagues noted that delegation effectiveness and organizational setting were critical determinants of PA cost-effectiveness in the HMO setting [7].

Studies have looked at the practice arrangements which can best utilize the clinical services of PAs. Past activity analyses were used to develop a model of primary care practice organization and productivity consisting of a list of 263 tasks that fully describe most typical primary care practices. From this list a model was developed that estimated that the introduction of a PA could increase medical practice productivity anywhere from 49 to 74 percent. That is, a physician usually producing 147 office visits per week may increase that number to 265 visits per week simply by hiring a PA; Nelson also found that when PA providers were actually studied in medical practices, they increased practice productivity (as measured by the number of office visits) by 12% during the first year after their introduction, and 37% in subsequent years [8].

A more recent study of PA cost-effectiveness of PAs was conducted in the ambulatory care setting where the performance of 4 PAs/NPs and 5 family physicians were compared using measures of the practice costs of both types of health providers working in a student health clinic, a type of prepaid system, and in a fee-for-service family practice clinic. Total hours worked, numbers of patients seen, revenue generated, and provider salaries were collected for the nine primary care providers over a 49 week period. In the student health clinic, the average cost for salaries to the clinic for each patient visit was $5.49 for PA and NP services, whereas it was $8.53 for each visit to the physician. In the family practice clinic, revenue generated per dollar of salary was $2.68 for PAs and NPs versus $2.62 for family physicians [9].

As noted, PA clinical effectiveness compares favorably to that of physicians, particularly in organized practice settings where team approaches and structured division of medical care staffing are used. Measures of PA productivity in the HMO setting are consistent with

findings observed in studies in rural private practices, urban ambulatory care clinics, and geriatric settings [10-12]. While it seems likely that similar levels of clinical productivity exist in other patient care settings, specific performance measures in other practice areas, such as inpatient hospital settings [13], have not been studied. Further research is needed on PA clinical performance characteristics since the range of specific medical tasks performed by PAs may differ among various clinical settings.

OBSTACLES TO PRACTICE EFFECTIVENESS

On the public policy level, the term "barriers to practice", i.e., medical, legal, and economic factors that present obstacles to PAs in performing the full range of clinical tasks for which they are educated and certified to perform [14]. States, through their health occupations licensing boards, have considerable control over the qualification requirements and practice activities of PAs, as well as those of physician and other nonphysician health providers such as NPs. States' authority in regulating PA and NP health providers permits boards to define provider scope of practice, determine physician supervisory requirements, authorize prescribing activities, and to establish and enforce standards of professional conduct and disciplinary procedures. Workforce parameters related to legal, scope of practice, and provider payment regulations are barriers to the practice effectiveness of NPs and PAs. A number of clinical practice factors have been identified where both NP and PA utilization could be better utilized in health service delivery [15 16]. For example, with expected increases in provider requirements for geriatric and nursing home care services, PAs were viewed as playing an increasingly important role in service delivery, yet a recent review of the PA and nonphysician literature on their utilization in geriatric care settings shows that the availability of these providers has failed to result in widespread use due to a variety of barriers to using their full clinical effectiveness [17].

Many believe that PAs, as well as other nonphysicians, are often constrained in their ability to fully serve to their full effectiveness in medical practices due to legal stipulations which may be overly restrictive. Legal obstacles to PA practice may reduce or eliminate the cost benefits that accrue from their utilization and may deter PA from practicing in certain states and/or serving medically needy populations. Uneven state medical practice acts, lack of authorization to prescribe medications, and the absence of Medicare and private third-party reimbursement affecting many rural ambulatory practice settings (exceptions being Medicare-approved rural health clinics) have been shown to restrict PA utilization [18].

These findings confirm the widely held view that scope of practice regulations, the existence of prescribing authority, and eligibility for reimbursement all affect PA utilization; and if these factors are unfavorable, they serve as barriers to PA practice effectiveness. The American Academy of Physician Assistants has developed model guidelines for state practice acts governing PA activities (Appendix E).

REIMBURSEMENT

Variation in systems of compensation for PA-provided health services has also inhibited their practice effectiveness. Federal Medicare policies governing reimbursement for PA services have been long identified as a clear barrier to their full clinical effectiveness [19 20]. Differing interpretations of Medicare's "incident to" clause, as defined by the Health Care Finance Administration (HCFA) determines how PA services may be paid for to employing practices. Historically under Medicare, services performed by various health

care professionals employed in physician practices are eligible for reimbursement under the assumption that such services are "incident to" the services of the physician. Reimbursement is paid at the physician fee level for office or clinic services provided by PAs or other clinicians in the practice whose activities are considered to be integral, though incidental, to the physician delivered service. The physician must be present when the PA-performed services are delivered, and services are billed and paid for as if the physician had performed the service.

The origin of this regulation far predates the now well developed clinical role of the PA in many rural ambulatory practice sites. Following the original intent for PAs to increase primary care access, state medical practice acts affecting these professionals were typically written allowing PAs to function without continuous on-site physician supervision. Physicians practicing in rural and medically underserved areas often hired PAs specifically to extend medical care services in such communities.

While PA services are covered if delivered in a federally-certified rural health clinic, Medicare will cover PA outpatient services in rural and certain urban clinics at 100% of the physician fee, but only if the supervising physician is present at the time the services are provided. This regulation does not allow for coverage of PA services provided when the physician is temporarily absent, nor does it allow for flexibility in those states where on-site, continuous, supervision is not required. In such instances, rural clinics too small to support a full-time physician may be prevented from utilizing a PA, since their services may not be reimbursed.

PA clinical services delivered in non-outpatient settings and practices are reimbursed under Medicare, but at fractional payment rates, depending again upon the site of the service delivery. Since 1987, Medicare Part B allows reimbursement for services performed by PAs in a nursing facility (at a rate which may not exceed 85 percent of the physician fee), in an acute care hospital setting (where it may not exceed 75 percent of the physician fee); and for PAs assisting at surgery as first assistants (where reimbursement may not exceed 65 percent of the fee paid to a physician first assistant). PA-rendered services under Medicare and all other third-party payors are billed under and reimbursed to the practice or institution employing the PA. Private third-party payors compound reimbursement issues for PAs. While some insurers will cover PA-provided services at physician rates as long as the PA is practicing with the limits of the state law, other third-party payors impose a variety of restrictions on reimbursement in such circumstances. Restrictions include on-site physician supervision (even if not required by state regulation), payment at a lower rate, or refusal to pay for certain services (i.e., assisting at surgery, a service commonly covered in other settings by many payors), or refusal to pay for any PA services. Health policy observers have noted that variation among state Medicaid programs regarding reimbursement for PA services contributes to limitations in PA utilization in the areas most in need of medical services [20]. Although they are improving, policies in some states remain inconsistent. For example, Medicaid reimbursement for PA services may vary among states from 100% to 65% of the physician fee. Recommended changes in federal and state payment policies and regulations, as suggested under proposed heath care reform legislation, aim to increase the clinical practice effectiveness of PAs, particularly in primary care roles, by encouraging health payors to adopt more uniform reimbursement policies for these providers.

PHYSICIAN DELEGATION PATTERNS

While conventionally-defined "barriers to practice" clearly affect levels of PA clinical productivity in a broad sense, there are also findings to suggest that differences in the delegatory styles of individual employing physicians are also important determinants of PA effectiveness. Barriers to practice in practice laws and regulations represent the parameters drawn for PAs, usually by physicians. Within these parameters, since clinical activities between physicians and PAs overlap considerably in many instances, scope of practice ("turf") issues arise between these health professionals.

Research work done at Kaiser Permanente, as well as data from other studies suggest that physician comfort levels and practice styles in delegating medical tasks to PAs have a significant influence on PA utilization and effectiveness in clinical practices [21]. In studies of performance and patterns of utilization of PAs, NPs, and CNMs, Weiner and colleagues noted a marked difference in the observed versus normative rates of delegation of medical tasks by HMO physicians when working with both PAs and NPs[22].

A recent report by Institute of Medicine (IOM) examined the current characteristics and projected future medical staffing requirements for the Veterans Administration health system. Measures of clinical productivity, professional functions, and anticipated future personnel needs were analyzed for physicians, PAs, and other types of health providers in the VA health system. The IOM report included data on the clinical activities, staffing relationships, and measures of utilization of four types of health providers: PAs, NPs, clinical nurse specialists, and certified registered nurse anesthetists.

Measures of the clinical practice activities and professional characteristics of these health providers were observed in both inpatient and outpatient settings, and surveys were taken to obtain their opinions regarding their duties. Results indicate that physicians and these health practitioners themselves believe that PAs, NPs, clinical nurse specialists, and certified registered nurse anesthetists are underutilized in the VA system. The factor found to be most critical in determining the effective utilization of these health-care providers was the medical task delegation style of the supervising physicians. The IOM study recommended that staffing efficiency in the VA system could be increased if physicians were more aware of the clinical roles and practice capabilities of these practitioners and better equipped to delegate tasks appropriately [23].

PRESCRIBING AUTHORITY

At present, 38 states, the District of Columbia, and Guam authorize prescribing privileges for PAs. In 1994, Alabama and Tennessee became the latest states to pass laws allowing PAs to prescribe a defined range of medications The shrinking cluster of states in the southeast (Appendix F) which do not authorize prescribing by PAs represents approximately a third of total U.S. rural Health Professional Shortage Areas (HPSAs) designated by HRSA.

Prescribing authority has been a particularly troublesome barrier to PA practice effectiveness in certain states and is believed to influence patterns of PA demand and utilization (18). A recent example of the influence of prescribing authority on PA utilization has been observed in Texas. Prior to the passage of a 1991 bill allowing prescribing for PAs (and similar providers), Texas had 26 federally-certified rural health clinics and less than 5% of the state's PAs practiced in small rural communities (less than 10,000 population). Prior to 1991, Texas PA regulations did not then allow prescribing nor permit off site supervision, despite the fact that the state had more than 70 counties either partially or fully designated as

HPSAs. By November 1992, the number of rural health clinics had nearly quadrupled to 99, and the percentage of PAs practicing in rural communities tripled, increasing from 5 percent to 15 percent [18],[24].

The first state statute to authorize prescribing privileges for PAs was passed in Colorado in 1969. It stipulated that graduates of the University of Colorado Child Health Associate program (pediatric PAs) could prescribe medications without immediate consultation from supervising physicians provided that the latter subsequently approved the script. New York authorized prescribing privilege to PAs in 1972; Maine, New Mexico, and North Carolina followed in 1973. By 1979, 11 states had passed laws allowing PA prescribing privileges. There has been a steady trend among states throughout the 1980s to authorize some form of PA prescribing activity. statute or regulation in recognition both of the essential nature of prescribing and medication use as part of the PA clinical role and of the authority of the supervising physician to delegate such tasks to qualified health professionals [25].

A study in Iowa reported that 95 percent of physicians, and 93 percent of PAs believed that PAs were qualified to prescribe medications with little or no supervision by the physician [26]. Similarly, all 29 Montana physicians who responded to a survey expressed confidence in the ability of the PAs they were supervising to prescribe most therapeutic agents, and 40 percent had no reservations at all about them prescribing any agent [27]). Prescribing authority applies to the outpatient or non-hospital setting. Authority for medication orders written for hospital patients are usually considered as falling in the purview of hospital institutional staff by-laws. Such by-laws or state regulations may include stipulations on medical order writing or prescribing which may include: (1) requiring physician co-signature in a given time frame for inpatient medical or therapeutic orders; (2) limitations on the categories of medications which may be prescribed by the PA, i.e., drugs delineated within a specific formulary or medication list; (3) exclusion for PAs to prescribe certain selected FDA schedules (usually FDA schedule II agents, i.e., those defined by the Controlled Substances Act as having the potential for abuse; (4) prescribing authorization only when drug treatment protocols are used; and (5) limitation of the quantities of drugs that may be prescribed by PAs.

One survey administered to PAs working in states having prescribing authority found that 90 percent of PAs included prescribing as part of their clinical activities when authorized. Sixty percent of PAs reported that included among the medications they prescribed were urinary/vaginal agents, upper respiratory medications, gastrointestinal agents, antiarthritic/ antigout agents, and analgesics. The mean number of prescriptions written per week was 50, and it was estimated that PAs write a total of 35.5 million new prescriptions each year; with refill prescriptions, the total approximates 65 million. The most frequently prescribed classes of drugs were non-narcotic analgesics, antibiotics, antihistamines, antihypertensives, and cough and cold preparations [27]. In 1993, the AAPA estimated that the typical PA in clinical practice in a state with prescribing authorization writes an average of 100 outpatient prescriptions per week. Overall, PAs are estimated to provide over 150 million patient visits, and write 165 million (8% of all scripts written) prescriptions.

AREAS FOR FURTHER RESEARCH

Research activity on the clinical and professional activities of PAs, NPs, and CNMs has languished of late, following the extensive health professions investigations conducted in the 1970s. While much about PA utilization and clinical potential has been learned from this past body of research studies and from widespread empirical observations, many aspects of PA clinical roles and capabilities remain poorly understood. For instance, what is the optimal mix of health care providers to be used to deliver primary care? How can the economic advantages of these providers be best utilized in the health systems of the future? No data exist to answer the question of how many PAs and NPs, along with physicians and other health professionals, would be required to staff newly emerging types of managed health systems or to meet anticipated health workforce needs in either primary care or GME-related areas.

Planning activities regarding the health professions should include an assessment of America's present capacities in the health care workforce, consideration of the short and long-term population-based need for medical services, and articulation of these estimates of need with national goals for services required to improve citizen health status [28]. The present lack of reliable information on activities in the health workforce places policy makers at a disadvantage in attempts either to promote the more effective use of PAs or to coordinate their supply and utilization with those of physicians.

Future research on PAs should focus on:

- ❑ measuring levels of PA productivity and patient care outcomes in a variety of clinical settings.
- ❑ comparing PA contributions to primary care with those of physicians and other health professionals.
- ❑ describing economic aspects of using PAs, including costs, revenues, and potential for savings.
- ❑ determining maximally effective PA-physician substitution ratios and task-delegation levels in primary- and managed-care settings.
- ❑ determining optimal staffing mixes and maximal PA-physician substitution levels in GME positions.
- ❑ describing current practice characteristics and content of care (including preventive services) delivered by PAs in primary care.
- ❑ determining factors contributing to minority attrition in PA educational programs.

SUMMARY

PAs can be cost-effective and productive members of the health care team. Costs and time associated with training a PA are considerably less than those for physicians. Clinical practice approaches the equivalency of physicians in some settings but is dependent on a negotiated relationship between physician and PA. Barriers to practice such as uneven state medical practice acts, lack of prescriptive authority, and restrictions on third-party reimbursement can be obstacles in the effective use of PAs. Additional research is needed on many aspects of current PA practice.

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Future Demand

Future Demand for PAs in Primary Care, in Specialty Roles, and in Hospital/Resident Substitute Roles

The PA profession, which began as a creative health personnel idea designed to meet a perceived health delivery crisis, has proven to be successful. This success is due in part to PAs' close professional relationship with physicians and to the similarities in the training the two professions receive. PAs are now well integrated into medical practices and have demonstrated clinical competency and versatility. Workforce requirements for PAs and NPs, as well as for generalist physicians, are projected to expand in order to meet future requirements for primary care services. Interest in increasing the utilization of PAs and NPs to deliver primary care services, particularly in medically underserved areas or populations, has returned to pre-Graduate Medical Education National Advisory Committee (GMENAC) levels [1-4]. America's future primary health care delivery system may be one in which a sizable portion, perhaps most, of primary care services will be delivered by PAs and NPs. Physicians are expected to assume an increasing amount of clinical specialty management and consulting responsibilities. Managed health care systems will seek ways to become more efficient economically and to better utilize professional expertise and capabilities.

A look at forces likely to reshape the nation's future health care system can be found in the report of the Pew Health Professions Commission, a commission which included representatives from virtually all of the health professions. In its visionary report, the commission listed 10 elements most likely to influence our future health system and its health care providers [5]. These elements reflect changing public opinions about what America expects of health care professionals. The Pew Commission's vision of the future of health care delivery (Exhibit 22) as a system in

EXHIBIT 22

Characteristics of Future Health Care Delivery

1. ***Orientation Toward Health*** – emphasis on prevention and individual responsibility for healthy behavior

2. ***Population Perspective*** –attention to health risks in the community; the social and physical environment

3. ***Intensive Use of Information***– patient and current practice information systems

4. ***Focus On The Consumer*** – redefining patient roles in decision making; use of patient satisfaction and outcome measures

5. ***Knowledge of Treatment Outcomes***– patient management based on identification and dissemination of the most effective treatment methods

6. ***Constrained Resources*** - concern over increasing costs; increasing use of approaches limiting expenditures

7. ***Coordination of Services*** – integration of providers and team emphasis to improve efficiency and effectiveness

8. ***Reconsideration of Human Values*** – balance technology with humane considerations

9. ***Expectations of Accountability*** – growing scrutiny by payors, consumers, and regulators; defined performance expectations

10. ***Growing Interdependence*** – further integration of domestic issues of health, education, and public safety; awareness of global context of health

SOURCE: Adapted from: Report of the Pew Health Professions Commission. Schools in Service to The Nation, 1993. [5]

which a multidisciplinary health professions team approach and increased emphasis on clinical efficiency and cost-containment will redefine the parameters of the division of medical labor.

As a consequence of public perceptions of physician responsiveness to pressing societal health care problems, policy planning in the future will seek to better address America's population-based health provider needs in a way which will also better accommodate patient expectations and outcomes. In the future, as the Pew Commission notes, America will demand increasing accountability from its health care professionals. This new accountability will require adjustments in the educational preparation of our health providers, including approaches extending the biomedical model to encompass both public health and behavioral sciences [6].

Demand for PAs in the medical marketplace appears strong and is believed to be likely to increase further. Requirements for PAs to serve in primary care roles within HMOs and managed care systems, as well as in private group practices, emergency departments, and ambulatory clinics; other settings expected to utilize increased numbers of PAs and similar providers include correctional health settings, geriatric facility, and private clinics; other anticipated areas of demand could include inpatient GME resident-substitute roles.

FORECASTING HEALTH WORKFORCE REQUIREMENTS

There is little consensus on the optimal methods of forecasting health professions supply and requirements [7]. Moreover, past quantitative forecasting methods have failed to include providers like PAs or have discounted their level of contributions and potentials in service delivery.

More than a decade ago, the GMENAC attempted to predict future health workforce requirements using a demand-based model derived in part by considering population patterns of disease and other indicators of likely usage of health services. For physicians, considering assessments of demand and comparing that to the projected supply in the medical education "pipeline," GMENAC predicted that there would be an excess of about 62,000 physicians by 1990, and an excess of 137,000 by the year 2000 [8]. GMENAC also considered the health workforce role and contributions of PAs and NPs, and projected that their numbers and utilization would increase over the next decade, but noted that the overall impact of these providers on the health delivery system would be small.

To assess the requirements for physicians, the original GMENAC study considered the overlap of health services provided by NPs and PAs. GMENAC's approach was to have each of its specialty-specific expert panels estimate the extent to which services normally provided by physicians could be "delegated" to these other clinicians. Initially, the panels estimated that under ideal conditions about 27% of all physician services should be delegated to PAs and NPs [8]. By 1990, this would have led to a requirement of about 140,000 PAs and NPs; but in view of the fact that only 70,000 PAs and NPs were projected to be in practice by 1990, (and in fact, there were far fewer actually in practice; best estimates total roughly 45,000). GMENAC's modeling panel later adjusted the overall (all specialties) physician-to-PA/NP delegation rate downward to about 15%. For the primary care specialties and OB/GYN, delegation rates ranged between 18 to 12%. These levels are low in comparison to actual observed delegation rates reported in carefully performed studies in HMOs and ambulatory practice settings.

Scheffler and Gillings attempted to estimate the demand for PAs by surveying a national probability sample of practicing physicians. The objective of the survey was to determine the number of employment openings for PAs (largely within the private practice sector) by undertaking an empirical analysis of factors which influence a physician's decision to hire a PA. Samples were taken at several

points in time. In 1976, it was found that there was an unconditional demand for 20,338 PAs and an additional conditional demand for 3,417 PAs. Fewer than 5,000 PAs at that time had graduated from educational programs and were engaged in active practice. About 53% of the estimated demand was from physicians in the primary care specialties, which included obstetrics and gynecology [9]

Medical marketplace demand for primary care providers like PAs is anticipated to grow in the future, particularly if proposed health system reform brings about a restructuring of the primary care delivery system based on HMOs and managed care systems [9]. It has long been recognized that these practice settings are ones where PAs and NPs can be used most effectively. Increased numbers of PAs may be required not only to augment primary care services in private physician practices, HMOs, and managed care systems, but also to augment medical staffing in inpatient teaching hospital settings as GME programs are downsized.

By considering, using the framework of Scheffler and Gillings, that demand for PA is most clearly based on marketplace trends and variables that influence their hiring, we can begin to conceptualize an approach to model demand. Changes in medical practice circumstances (including the types of settings) that affect these variables will influence PA demand and utilization. Currently, there are a number of observable yet anecdotal trends in the health sector pointing toward an increased demand for PA services (Exhibit 23).

HEALTH SYSTEM REFORM REQUIREMENTS FOR PAS IN PRIMARY CARE

If health reform measures now under consideration are enacted bringing about higher requirements for primary care services, there will be

EXHIBIT #23

Indicators of Increased Demand for PAs in the Medical Marketplace

- ❑ Collective estimates by PA educational program directors of numbers of available positions for recent PA graduates; 1993 estimates reveal an average of 5 PA positions available per graduate. Reported IN: D. Oliver, Ninth Annual Survey of PA Educational Programs, Association of Physician Assistant Programs, 1993).
- ❑ Rise to 12% in percent of vacancy rates for PAs to fill inpatient hospital positions; report notes projections of more PAs needed for hospital positions in the future (Stone, **Health Care Careers**, 1992) [10]
- ❑ Trend data in AAPA Annual Census Data documenting the rapid rise in PA mean salary levels exceeding annual rate of inflation; Kraditor, K. Division of Research, AAPA, 1993).
- ❑ American Academy of Physician Assistants survey data of a sample of employment advertisers seeking PAs, and the recent marked increase in the past two years of employment ads seeking PAs (J.B. Willis, personal communication, AAPA, 1993).
- ❑ Recent U.S. Department of Labor projection of a 36% increase in PA jobs in the workforce by 2005.
- ❑ Bureau of Labor Statistics career outlook projections for health care professionals indicating increased demand for PA services.
- ❑ Projected health workforce projections of future demand for nonphysician providers in estimates of the Bureau of Health Professions, HRSA.
- ❑ Perceptions of increasing market demand for PAs as reported in state survey data of practicing PAs (Von Seggen and Hinds, **North Caroline MedJ 1993**) [11].

increased requirements PAs and similar professionals for primary care roles across a wide range of clinical settings. These will include:

- ❑ private medical practices
- ❑ rural health clinics
- ❑ ambulatory care units in medium and smaller community hospitals
- ❑ multispecialty group practices
- ❑ public health facilities/community clinics
- ❑ geriatric facilities
- ❑ occupational health settings
- ❑ correctional health systems
- ❑ student health clinics
- ❑ health maintenance organizations/ managed care systems.

FORECASTING REQUIREMENTS FOR PAS

At present, one problem in the development of accurate workforce requirements for PAs is the lack of reliable data on PA practice activities and service contributions in the health system. This applies to PAs across all clinical practice settings and precludes a systematic multivariate analysis of the factors in the health care system most likely to influence their patterns of future demand in the medical marketplace. Nonetheless, by using available data and workforce trends on similar health providers and considering directions of change in the health services sector, it was possible for AGPAW to develop broad estimates of the anticipated demand for PAs. The economic forecasting model was developed by Len Nichols, PhD, member of the Workgroup and health economist at the Office of Management and Budget. By using a combination of trends in historical growth in utilization, data describing current utilization patterns, expected requirements for health providers in various sectors of the health system, and health care reform changes anticipated to alter personnel needs in the health workforce.

EXHIBIT #24

Health System Measures and Trends Affecting Workforce Demand for PAs, Under Two Health Reform Scenarios, Percent Change

Health System Measures	Baseline	Reform 1	Reform 2
		%	
Overall Demand for PAs	+6.0%	X1	X2
Hospital Demand for PAs	+8.5%	1	Y2
Hospital Admissions	- 0.4%	0.0%	0.0%
Outpatient Department Visitsq	+6.2%	6.2%	6.2%
Office Visits	+2.2%	3.2%	3.2%
Rate of PA Salary Increase	+10.0%	5.0%	15.0%
Rate of MD Salary Increase	+5.0%	5.0%	10.0%
Rate of NP Salary	+8.2%	13.2%	3.2%
Growth in HMO/Managed Care Enrollment	+4.0%	8.0%	12.0%
Change in Residency Slots for PAs	0.0%	1.4%	2.1%
Growth in Primary Care Physicians	+0.4	1.5%	1.5%
PA Demand Projections		X1 = 9.8% Y1 = 14.7%	X2 = 9.8% Y2 = 13.8%

* Econometric workforce demand model developed by Len Nichols, PhD, Office of Management and Budget, December 1993. Model data sources and assumptions presented in Appendix G.

How many PAs, expressed as the number of physician-PA health care teams will be required in the future to deliver primary care in a managed care setting. One workforce estimate of future PA demand and implications for physician requirements has been put forth by Hummel of Group Health of Puget Sound, Seattle. The model is based on the fact that a primary care physician can cover the health care service needs of anywhere between 1600 to 1800 individuals annually in a managed care practice setting and that this service need translates into (given American 250 million population) a requirement for 150,000 primary care physicians. At present there are about 88,000 primary care physicians under 55 in active practice in the U.S. If a physician practicing alone can provide the health services required for between 1600 to 1800 persons, and assuming that each primary care physician would be teamed in the practice either a PA or NP, the number of individuals who's primary care services could be covered would increase depending upon the level of patient services that could be covered by the PA or NP. For instance, if we assume that the addition of a PA to the practice could increase the number of individuals covered to 2400 (a one third increase in practice productivity). This increase in the total practice productivity suggests that workforce requirements for primary care physicians could be reduced if more physicians were able to utilize PAs or NPs in service delivery. If all primary care physicians were able to increase clinical productivity in this way, it would reduce future workforce requirements for primary care physicians to 104,000. Clearly, while the exact number of individuals for which the addition of a PA or NP could increase practice service coverage may vary due to many factors (intensity of services delivered, patient case mix, PA/NP scope of practice and supervision requirements), the potential for using PAs and NPs along with primary care physicians to increase clinical productivity in managed care systems is quite apparent. These factors hold important implications for not only staffing in managed care settings but also for health workforce planning and estimates of physician requirements.

Health workforce projections must recognize the present insufficient supply of PAs, the factors constraining educational programs to increase graduate output, and the system forces affecting (and limiting) PA utilization. This insufficient supply also includes a lack of enough primary care providers to meet community needs. The number of primary care health providers from racial and ethnic minorities must increase in order to ensure equity in access to health services among all citizens. Populations lacking primary care services have higher rates of overall mortality, higher incidence of communicable disease, while at the same time they also suffer adverse effects of poverty, crowding, and crime. Policies for the health professions in the future must include support to minority institutions and communities to aid in the training of increased numbers of racial and ethnic minority PAs and primary care physicians. Originally, the PA profession relied heavily on recruiting former military medical corpsmen. Current downsizing of the U.S. military will result in an increased number of medically trained individuals, many of whom are minorities, available to the future health professions' applicant pool. Programs of medical retraining and obligatory deployment in underserved areas could be effective personnel strategies in helping to meet future health system objectives.

PRIMARY CARE

PA roles in primary care and in extending primary care access to rural and medically underserved populations remain a high priority for federal health policy makers. While an effective track record exists for PA, NP, and CNM educational programs in preparing these health professionals for such roles, attracting enough of these providers to rural and other needy areas remains a challenge [13-15]. In addition, a number of identified barriers to PAs' full practice effectiveness remain [14].

Since physicians continue to avoid practice in primary care fields, increasing the utilization of PAs has been suggested as an effective near-term health professions strategy to improve access to primary care in underserved areas [15]. In assessing future health professions supply and requirements, PAs and NPs should be included as key components in future workforce planning. PA annual graduate output to supply more of these providers in primary care practice roles may require increased levels of federal funding. Yet for the approach of using PAs to augment primary care services to be fully effective, practice barriers must also be lowered and greater financial incentives be offered to allow primary care practices to better compete with hospital-based, specialty, and subspecialty employers seeking PA services.

SPECIALTY AREAS

Physicians in a number of clinical specialties use PAs as key members of their team. In 1994, over 25% of all PAs work either in surgery or in one of the surgical specialties, with nearly 10% practicing cardiovascular surgery and 8.2% in orthopedic surgery. In surgical subspecialty practices, PA clinical duties span a wide range of responsibilities that commonly include performing the preoperative workup of the patient; intra-operative tasks such as harvesting of bypass veins, first or second assisting the surgeon with the procedure, or assisting in cardiac bypass hookup; postoperative monitoring; hospital rounding and routine management; and on-call/ emergency responsibilities. PA utilization has been shown to be particularly effective on inpatient clinical services and in emergency department settings, where staffing patterns using a combination of MDs and PAs appear to provide services more economically and with equal or better outcomes than a physician-only staff [15-16].

A recent report provided information related to the number and practice activities of PAs utilized in certain clinical specialties. Physical medicine and rehabilitation (PMR) is one specialty in which a shortage of physicians is believed to currently exist, and where PAs, based on their present utilization patterns, may be expected to be in increased demand in the future. Both physicians and PAs in active practice in PMR were surveyed; of 1,082 responses received from physiatrists, 137 (13%) employed a PA in their practice and an additional 435 (41%) were aware of a PA working elsewhere in their facility [17]. Another report based on a sample of practicing neurologists revealed that 29% worked with or employed either a PA or NP [18].

PA POTENTIAL TO REPLACE RESIDENTS

Reduction in physician residents in GME programs in academic health centers and teaching hospitals creates medical staffing will likely increase the demand for NP and PA services to help meet clinical services personnel requirements in teaching hospitals and academic health centers [19-21].

Utilization of NPs and PAs in inpatient care roles is already fairly common in teaching hospitals. A 1993 survey of Association of American Medical College Council of Teaching Hospitals (COTH) members, revealed that in a majority of institutions, GME residency program directors indicated that they were already using PAs and/or NPs or were planning to employ them in the future. Directors indicated that these PA and/or NPs were utilized on clinical services to replace the services of physician residents [22]. Among the 255 reporting COTH departments indicating that PAs and/or NPs were employed, a total of 116 hospitals used PAs, 77 used NPs, and 62 used both; similar numbers of NPs and PAs were utilized on primary care/general medicine services (11 versus 8), more NPs were used on pediatric services (28 versus 1), and more PAs were used on surgical services (50 versus 7) and emergency departments (14 versus 2).

Anticipated increased demand for NPs and PAs in downsizing GME programs will further exacerbate the projected requirements for these providers in the workforce. Since positions available for NPs and PAs in inpatient/specialty roles tend to currently be more plentiful in the medical marketplace and tend to pay higher salaries, these trends could adversely affect the numbers of NPs and PAs in the workforce able to meet projected primary care provider shortages.

Teaching hospitals and academic health centers are undergoing changes in their medical staffing due to anticipated cutbacks in residency positions. COGME, the Physician Payment Review Commission (PPRC), and influential others have recommended that annual available physician residency slots be limited to 110% of the number of U.S. allopathic and osteopathic medical graduates [23-24]. This policy approach is part of a larger plan which would restructure the personnel composition of GME and its financing mechanisms with the objective of reducing the overall number of physician specialists and subspecialists entering America's health care workforce. GME reform proposals are included as key elements in most of the health care reform bills now pending, including the administration's version, the Health Security Act [25].

If proposed changes affecting GME configuration become law, in the next three to five years the number of physician residency positions will be reduced from their current levels of 100,000 to roughly 75,000 positions. The annual number of PG-1 residency positions available to medical school graduates would fall from the current number of 24,000 to about 17,000 positions. Measures reducing the number of residents and shifting positions within subspecialty fields to those in primary care programs will be disruptive to teaching hospitals. Teaching hospitals with downsizing GME programs are likely to compensate for clinical service losses due to fewer residents in one of three ways: (1) reduce clinical services/eliminate beds; (2) enlist community and attending physicians to provide housestaff coverage, or (3) substitute PAs and NPs to augment clinical service staffing.

With an overall expected loss of about 11,000 residents within GME-sponsoring institutions, one projected outcome of downsizing would be that in order to meet current medical staffing requirements while

continuing to provide roughly current levels of service, institutions would require an additional 7,700 either PAs or NPs [24]. The workforce estimate of 7,700 nonphysician-resident substitutes could be divided equally among these professionals, although one might argue that, given their training orientation and patterns of current practices, more PAs than NPs might be utilized to meet this requirement. It may be useful to distinguish current trends in practice between PAs and NPs since, not only utilization patterns, but also common perceptions and expressed viewpoints of organizational leaders, PAs seem to be better suited for roles in acute care settings and/or as resident-substitute positions. While it must be recognized that 36% of all NPs work in hospitals, an unknown proportion of whom fill inpatient house staff roles working in medical or surgical subspecialties, available data and expert opinion from both professions concur that these trends appear accurate.

Nonetheless, if we consider for the purpose of discussion that requirement of 7,700 additional PAs and NPs were met equally, it would mean that a sizable additional number (3,850) of each provider type would be needed in the health workforce. This requirement would be those PAs and NPs required to meet GME downsizing workforce needs, and obviously does not include ongoing and/or expanding demand for these providers in other workforce sectors. The 3,850 figure of needed PAs for instance, is more than twice the 1710 PA graduates in 1993; in the same year, there were 2,300 NP (including CNM) graduates.

Current estimates of the total number of PAs and NPs in active clinical practice in 1993 in the United States is 51,800 (23,300 PAs, and 27,500 NPs [which includes 4,100 CNMs]) [26]. Thus, it would appear that if PAs and NPs are expected to plug a large part of the health personnel gap brought about by GME downsizing, a significant increase in the supply of educational program graduates for these professionals will be necessary.

PA utilization as house staff in inpatient settings has been found to have certain advantages: some faculty prefer to work with PA house staff; PAs may have a lower turnover rate, increase service continuity, be more familiar with departmental routines, and possess greater clinical expertise than junior residents. Using PAs in former resident positions on teaching services in internal medicine programs has been shown not only to be less costly on an annual basis, but also to result in the enrichment of the educational experiences of residents[27,28]. When patient care duties are redistributed among residents and PA house staff, medical staffing reports mention high levels of acceptance by employing physicians and patients, favorable cost-benefit, and maintenance of patient care quality. PA utilization in GME substitution roles has also been noted to provide richer educational experiences for residents[29].

The PPRC estimates of the numbers of PAs and NPs who will be required in the workforce as part of GME residency reductions are found in the data of Knickman and colleagues from New York University whose research addressed the clinical potentials of several types of providers to fill resident roles. In a time-motion study examining the clinical activities of two NPs and eight internal medicine residents in two New York City teaching hospitals, Knickman and colleagues documented the time taken by physicians versus other types of health personnel in performing inpatient medical care tasks traditionally done by physician residents and compared those times to estimated times under a revised inpatient staffing model. To determine the time per task activity potential for resident substitution, inpatient clinical, educational, personal, and

administrative activities were classified by: (i) those that had to be done by physicians, (ii) tasks that were educational only, and (iii) those that could be done by PAs, NPs or other personnel. A total of 1,726 specific activities were recorded. Under scenario 1 (which is the traditional model where the physician serves as the primary medical manager of the patient), about half of a resident's time is spent in activities that must be performed by a physician; under an alternative model where a PA or NP would assume an appropriate level of clinical responsibility for day-to-day patient monitoring, only 20% of activities would require a physician. The study concluded that there is substantial potential for PAs and NPs to assume inpatient medical tasks, that only 20% of each resident's lost time needs to be replaced with other physicians' time, and that to achieve this level of clinical efficiency, inpatient hospital staffing models would need to be restructured, so that PAs and NPs could be used to augment physician services [30].

Already the demand for PAs by hospitals is beginning to be increasingly felt in the medical personnel marketplace. In recently reported data [10], based on a American Hospital Association (AHA) survey of 3,184 U.S. hospitals, the vacancy rate for PAs rose from 10.1% in 1991 to 12.3% in 1992 and was expected to climb higher yet in 1993. The 1992 double-digit vacancy rate for PAs was the second highest of the 25 health occupations reported in the AHA survey.

FINANCING ISSUES

Financial support through Medicare is provided directly to teaching hospitals sponsoring the clinical specialty training of physicians. The three- to eight-year process of GME takes place largely in teaching hospital settings, and comprises clinical educational experiences in which physicians complete their medical

EXHIBIT #25

Personnel Who Could Be Substituted/Needed to Perform Physician Resident Activities, Two Staffing Scenarios, by Percent Time

Time Performing Activities, By Personnel Who Could Be Substituted	Scenario # 1 Physician Only Staffing	Scenario # 2 Physician - PA/NP Staffing
	Activities/Clinical Tasks Performed by Medical Staff — %	
Time Performing Physician-Only Tasks	47.7	20%
Time Performing Clinical Tasks That Could Be Done By PA/NPs	7.4	35
Educational Time	20.7	20.8
Time Performing Tasks That Could Be Done by Technicians, Nurses, Others	11.8	10.6
Personal Time	13.3	13.4
Total	100.0	100.0

SOURCE: Adapted from: Knickman, et. al. **Academic Medicine** 1992; 67: 429-438.

professional preparation and obtain qualification for state medical licensure and specialty board certification. Medicare provides the financing for a large proportion of physician residency training (GME) by paying for a portion of hospital educational costs by reimbursing hospital charges through a direct cost "pass through" mechanism, and by allowing for an indirect cost educational adjustment for payments to hospitals eligible for reimbursement for educational activities under Medicare Part A DRG (diagnosis-related group) payments.

Teaching institutions now face cutbacks in Medicare subsidies for medical education. Teaching hospitals are compensated for their GME activities under Medicare payments proportional to their annual number of Medicare-covered patient/days. They receive Medicare direct medical education (DME) and indirect medical education adjustment (IMEA) payments, the latter based on hospital eligibility criteria relative to levels of noncompensated care. State-imposed legal limitations on the numbers of hours worked by physician residents are becoming increasingly common and encourage hospitals to use PAs and NPs to augment physician-resident services. However, Medicare funding for health professions education does not include utilizing PAs or NPs on inpatient clinical services.

Options for hospitals in New York to deal with limitations in resident work hours include enlisting attending physicians to replace residents, or hiring licensed physicians to serve as house officers, both expensive options. A staffing mix using PAs with physician residents was shown to be far less costly in providing necessary coverage levels for inpatient services ($160 million versus $85 million) than the former options. Yet the adoption of such an approach would require about 1,300 additional PAs for New York teaching hospitals alone, in circumstances where the annual current supply of PA graduates totals 1,700 and where many hospitals already have difficulty attracting sufficient numbers of PAs [28].

Hospitals employing PAs as general medical house staff and/or in GME substitution roles are believed to be using one of two existing financing methods to obtain reimbursement to cover costs of inpatient PA staffing. Hospitals may recover employment costs of PA personnel by either: (1) incorporating their costs into per diem charges which are billed and reimbursed under Medicare Part A DRG-based payments, or (2) by billing for the clinical services performed by PAs through eligibility under Medicare Part B which allow payment when PA services are performed in certain settings. Prior to Part B eligibility (P.L. 99-509, OBRA, 1986), hospitals employing PAs typically covered their employment costs by building them into the per diem charges hospitals billed under Medicare, DRG-based, Part A allowances. It is believed that many hospitals continue to finance their use of PAs through this mechanism, rather than by billing for PA services under the Medicare Part B option.

SUMMARY

Even the most conservative models used to forecast future demand for PAs indicate the current numbers of practicing PAs and students will be inadequate. Demand for PAs is expected to increase in HMO and managed care settings, in hospitals where they will serve as house staff, and in both primary care and specialty care settings. Health workforce planning should take into consideration the implications of PA substitution in GME programs considering current supply and demand for PAs in other health sectors. There is a need for further research on the methods of estimating PA demand in the workforce and projecting future requirements. Policy planning should include revised guidelines governing the award of funding to support PA and NP clinical training for GME-substitution roles, and modified financing mechanisms to reimburse hospitals for NP/PA inpatient services.

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Implications For Physicians

Summary of Key Policy Issues Facing PAs in the Health Workforce

AMERICA'S HEALTH WORKFORCE—PERCEIVED PROBLEMS AND NEEDS

The American public perceives that serious problems exist in the health care system and that reform is required. Many of the present problems relate to the health workforce and center on health provider specialty mix and geographic distribution (1,2). In its *Third Report*, COGME found that:

- ❑ the rising physician-to-population ratio will do little to improve the public's health or increase access to services and will hinder cost-containment efforts;
- ❑ there is an imbalance of physician specialty distribution with too few primary care physicians and too many specialist physicians;
- ❑ America's medical educational system is disarticulated between its undergraduate and graduate medical education (GME) components, and does not respond to regional and national workforce needs;
- ❑ there is an absolute shortage in the number of primary care physicians, which contributes to continuing problems in health services access;
- ❑ there continues to be a decline in interest in generalist training among recent medical graduates, i.e., in 1993, only 16% of medical graduates selected residencies in primary care residency programs;
- ❑ the preparation of physicians for roles in primary care is often inadequate for future practice responsibilities, particularly in managed care systems;
- ❑ there is a need for better health workforce planning and to restructure financing and reimbursement systems to attain the appropriate specialty mix, racial/ethnic composition, and geographic distribution of physicians [3].

The mismatch between physician supply and health care needs will be magnified as the nation establishes universal access to care and shifts to systems of managed care. Strategies aimed at strengthening workforce capacity to deliver primary care and to improve effectiveness in reducing costs and increasing access will require many years to attain if physicians are the only professionals assumed able to deliver medical care services. If policy goals for the health care workforce put forth by COGME and others are to be achieved, the participation of other members of the primary health care team, specifically, PAs and NPs, will be required. Under that assumption, there will be increased requirements for PAs which cannot be achieved at current levels of graduate supply.

Some futurists envision systems in which the bulk of primary care services are delivered by PAs and NPs; physicians would assume larger roles in staff management, administration, and clinical consulting. Such changes in medical labor division may be more efficient for medical practices and organized delivery systems and may be a more rational and economic utilization of medical expertise and talent [4].

Increasingly, PAs and NPs are incorporated in the staffs in medical practices and institutions. While this report intends to focus on PAs, it is important to acknowledge the presence of NPs in the workforce. Both PAs and NPs are often thought of as similar types of health care providers, in that their functions are similar in comparable settings. In a number of clinical settings, for example, HMOs, managed care health systems, and ambulatory clinics, their job descriptions are the same and their roles regarded as interchangeable. Major research reports and policy analyses which have examined both of these health professionals consider them to be equivalent when utilized in ambulatory practice [5,6].Differences exist in their professional orientation, educational backgrounds, and legal scope of practice, and professional practice patterns.

It is estimated that 49,500 NPs have received formal training and that currently there are about 27,500 in active clinical practice [7]. NPs represent 1.3% of the total pool of licensed nurses; of all NPs, about 4,500 are CNMs. NPs are distributed mostly in the primary care fields of adult medicine, pediatrics, women's health, student health, and geriatrics. NP practice is based largely in primary care settings. NPs are expected to further expand their profiles in nursing homes, home care, and community-clinic settings [6].

There are 243 accredited educational programs for NPs and 17 CNM programs; NP and CNM programs shared federal support under Title VIII Division of Nursing grants, which funded 81 programs in 1992; in 1993, a total of $14.2 million went to support NP training under Title VIII authority in the Division of Nursing, Bureau of Health Professions [7].

Even in the absence of far reaching health care reform, it is anticipated that demand for and utilization of PAs and NPs will increase. In this report, AGPAW has presented findings indicating that PA supply is far less than current demand and that future demand may increase sharply. Similar changes are also envisioned for NPs and CNMs, particularly in helping to meet primary care delivery needs under a reformed system providing universal access. Projections indicate requirements for higher numbers of both PAs and NPs to fulfill roles as primary care practitioners in private practices, expanding managed care systems, and institutional settings [8].

IMPACT OF INTERNATIONAL MEDICAL GRADUATES

Another type of health professional must also be considered in the changing composition of the health workforce. The contributions of international medical graduates (IMGs) to medical service delivery is significant. IMGs comprise nearly a quarter (23%) of the Nation's active physicians in 1993, and 20% of physician residents (9). Higher proportions of IMG physicians as opposed to U.S. graduates have pursued retraining for primary care roles [10].

COGME has noted with concern the expanding numbers of IMGs seeking enter to the already oversized GME system. The majority of the 4000 increase in residency program numbers in GME 1993-94 were filled by IMGs; total GME positions now number 102,000 residents. (Association of American Medical Colleges, Report to COGME, April 12, 1994). The prospect of a physician oversupply in the workforce in the future, plus the probable downsizing of GME, may place limitations on the future number of IMGs admitted to residency programs [11]. Further restrictions on IMG entry to GME, essentially precluding them to obtain medical licensure, may lead to increasing medical workforce problems involving PAs. IMGs, who once held hospital house staff positions now filled in many cases by PAs, may pressure medical boards to grant them credentials as a PA. Of late, IMGs who have been unable to attain medical licensure have sought to amend state PA statutes in at least four states (Florida, Maryland, New York, California).

POTENTIAL CONTRIBUTIONS OF PAS TO WORKFORCE NEEDS

PA educational preparation, certification, practice characteristics, and supply and demand issues discussed throughout this report provide evidence that PAs can help to ameliorate the problems cited above in the COGME Third Report. First, the education of all PAs emphasizes primary care, using a competency-based curriculum that focuses on skills to provide care for patients of all ages in ambulatory settings. Almost all states require passage of the National Certifying Examination in Primary Care as a requisite for licensure. The costs of

preparing a PA are estimated to be one-fifth that of preparing a physician and the time considerably less. Another important issue related to PA practice is that it is linked to that of physicians. State practice acts require physician supervision, and a number of states limit the number of PAs who can be supervised by a single physician. Typically, the PA to MD ratio is 2:1. These requirements, intended to control quality of care, may be limiting in isolated and remote areas. In such settings, it is often difficult to recruit a physician supervisor.

PAs have demonstrated versatility in practice, and function in many different settings and specialties. Many select careers in health care shortage areas or with underserved populations, often in sites where physicians do not choose to practice. However, career choices for PAs are also influenced by the same factors that have influenced physician choices. PAs trained in institutional settings are likely to practice in similar settings, and higher salary offerings in specialty practice lure PAs away from primary care. Changes in the reimbursement scheme for medical services that favor primary care versus specialty practice will likely have the same effect on PAs as that anticipated with physicians.

The demands for PA services are increasing, particularly in managed care settings. This relatively young profession comprises a workforce with high job satisfaction, low attrition, and many years of potential future service.

EDUCATIONAL FINANCING ISSUES

The federal government provides substantial support for health professions education. The largest share comes from the $5.2 billion Medicare subsidy of GME. Both current and proposed GME funding mechanisms are predicated on the belief that it is in the publics interest for taxpayers to underwrite part of the expense of educating physicians and other health professionals. Special categories of Medicare support goes to teaching hospitals who tend to have higher operating costs and levels of noncompensated care services. While a variety of health professionals, but mainly physicians, receive educational subsidies, PA educational programs do not. Current incentives under the existing Medicare system of GME subsidy payments encourage teaching hospitals to maintain high numbers of residents, and perpetuates a system where GME program size is based primarily on institutional service and revenue needs, rather than on educational and or workforce supply considerations. Changes in the structure and financing policies of Medicare-linked direct medical education funding which supports training for a variety of health professionals are being considered. The policy rationale is that if future health workforce requirements call for an emphasis on the training of generalist providers, health professions educational programs receiving federal training support must be more accountable to the public in terms of their final product, i.e., physicians, and their specialty choice and practice location.

Medicare policy has been slow to respond to needs to shift patterns of physician education and practice. It has long been advocated that numbers of generalist physicians could be increased by shifting the locus of residents' training experiences to outpatient/ambulatory care clinics. However, Medicare does not support training in these settings. PAs and advanced practice nurses (clinical nurse specialists, NPs or CNMs) are not eligible currently for direct support through the Medicare payments. Federal dollars supporting PA and NP training have been awarded through grant programs. These training grants have produced many important results and require accountability for program

outcomes, such as numbers of program graduates practicing in underserved areas. However, available funding is limited and not nearly enough to accommodate all applicants.

Policy changes in the financing of health professions education are likely. The administration's Health Security Act proposed extensive modifications affecting the health workforce, including using the GME educational subsidy to help meet workforce policy goals. GME subsidies should aim to increase primary care physicians and help achieve a 50-50% generalist-specialist physician balance. Reforms also call for an all-payors funding pool for health professions support to help fund the high costs of academic health center teaching. Some proposed reform plans include funding channels. e.g., a graduate nursing education fund (so called GNE) supporting advanced practice nurses (APNs), which includes NPs and CNMs, and also clinical nurse specialists. Given the fact that PAs will be equally important in meeting workforce reform goals, particularly if anticipated increases in PA requirements in teaching hospitals transpire, a strong argument can be made for including PA educational programs in a designated all-payors funding category, or creating a similar channel of support, as a means of assisting expanding PA programs.

SUBSTITUTION, AUGMENTATION, AND TEAM PRACTICE

The clinical performance of PAs has been described as approaching that of physicians' capabilities. The number and range of tasks PAs can perform, or their abilities to substitute for physicians' services, depends on negotiated agreements between individual PA-MD pairs. The nature of these agreements is influenced by the physician's degree of confidence in task delegation, the length and type of the PA's experience, and physician and PA practice preferences. As the profession has evolved and as the practice of medicine changes, more often these decisions are made by groups of physicians or corporate managers within the parameters of state practice regulations.

In most practice settings, responsibility for the quality of the work of the PA, including examination, orders, interpretation of findings and treatment remains with the physician. PAs emerge from a period of formal education with a set of skills, validated by the educational institution, and confirmed by passage of the national certifying examination. In most cases, the employing physician will validate these skills by direct observation and review before allowing the new PA a wide range of freedom and authority. Once a level of confidence has been established, delegation of authority is constantly enlarged and extended to a degree that a seasoned PA in a stable practice environment may be authorized to do most of the medical tasks performed by the supervising physician.

Whether the PA does or can do 70%, 80%, or 100% of the tasks done by the physician is a reflection of the level of comfort of both PA and MD and the level of confidence of the MD with the professional skills of the PA. The level of delegation is negotiated between the MD and PA, and the level is not constant. PAs learn new skills and the increasing level of physician confidence and the need for more services within the practice cause this team to extend the level of delegation.

Notwithstanding the changing level of delegation and the expanding level of skill of most PAs, there are practical limits to the ability of a conscientious physician to supervise the work of a PA. These limits are not usually imposed by the physician alone. They are, as with the level of delegation, a result of implicit or explicit negotiation between PA and physician. Most physicians and PAs prefer to discuss all difficult or unusual cases and unexpected outcomes. These

interactions require time and a level of personal involvement by the physician in the care rendered by the PA. The more compulsive the physician or the more insecure the PA, the larger the percentage of the practice time required. The type of patient and the setting of the practice have a large influence on these requirements. A "sick-call" setting, in which young, relatively healthy individuals are seen for acute illness, would require little time for consultations. A setting in which frail patients are seen for severe illness, such as a newborn nursery or a geriatric unit, would require frequent consultations and a high time commitment by the physician. The practice styles of MD and PA, the severity of the patient's illness, and the level of experience and comfort which they have with each other are more potent determinants of the requirement of physician time and effort than the level of knowledge or skill gained by the PA during his/her educational experience.

Many PAs, who have considerable clinical experience before entering the discipline or who acquire special interests and skills, bring additional skills to their practices that augment the practice's services. Examples include special expertise in patient teaching, nutrition counseling, or women's health. When such expertise is recognized, physicians may consult with PAs about improved approaches to the care of their own patients.

Recently, the American Boards of Internal Medicine and Family Practice issued a joint statement about the generalist physician. In this joint paper, they commented on the spectrum of generalist care and recognized PAs and NPs as having important roles and the need for "well-integrated teams to enhance the quality and availability of cost-effective patient care" [12].

Irrespective of changes in the numbers of generalist physicians, other factors such as practice features and lifestyle issues may influence their practice choices. Many believe that provider satisfaction and the quality of patient care can be enhanced through the organization of PA/physician or NP/physician teams in the delivery of primary care services. Increasingly, primary care residents are being trained with PAs and NPs and experience the benefits of collaboration about practice preferences, special skills, and case management.

Organizations of managed care often employ physicians and PAs and NPs in team practice arrangements with ratios of 3:1 or 4:1 and achieve quality services at reduced costs. Supervision of a PA requires time and increased responsibility on the part of the supervising physician. A reasonable estimate of the time requirement is 10% or one half day per week per supervised PA. This will vary based on the level of confidence of both PA and physician. This time may be lessened in team practice arrangements involving multiple physicians and more than one PA.

IMPLICATIONS FOR THE FUTURE

Key health care reform policy goals include lowered medical care access barriers, contained costs, and greater incorporation of new organizational structures ("managed competition") in health services delivery. This direction means a greater reliance on HMOs and other types of prepaid and managed health care delivery systems. The clinical staffing mix of future HMOs will be based in large part on the capabilities and efficiency of health care professionals in providing the required range, access, and quality of medical diagnostic, therapeutic, and preventive care services in a manner acceptable to enrollees. Many believe that these efforts will improve access to health care, promote greater effectiveness in medical care resource allocation, and place less emphasis on ability to pay as a criterion for insurance coverage. As these delivery systems become the principal locus of primary care services, there will be an

increased demand for both primary care physicians and other primary care providers.

In a recent analysis performed for COGME, Weiner assessed the requirements for physicians, both primary care and specialty, within managed care systems through the year 2000. Projected estimates were developed using clinical performance data and setting requirement standards based on available information obtained from various segments of the health system. These derived standards were applied to that proportion of Americans assumed to be receiving medical care services within each sector. Special attention was directed to HMO staffing levels. Estimates of requirements were compared to projections of physician supply developed by the Bureau of Health Professions for future years through the year 2000. Supply estimates were developed under two alternative workforce scenarios. One assumed that 20% of medical school graduates will enter primary care practice areas between 1993 and 2000, and the other assumed a 50% entry to primary care.

An important conclusion from both scenarios was that the future supply of physicians will outstrip significantly the expected requirements. Specifically, there will be an approximate surplus of 125,000 physicians (45 physicians/ 100,000 population) or nearly a quarter of all physicians expected to be in active practice in the year 2000. Under the first scenario, Weiner estimated a shortage of about 6,000 primary care physicians and an excess of 131,000 specialists. Under the second scenario, the imbalance is narrowed with the supply of physicians in primary care estimated to be about 13,000 more than the estimated requirements, and specialists 113,000 more than requirements [13].

Predictions of an oversupply of physicians were made more than a decade ago in the GMENAC reports, yet the workforce-related impact of oversupply and maldistribution contribute to persistent problems of health care access and costs. The strategy of simply increasing total physician supply in the workforce has not helped, but in fact has exacerbated many of the present health system problems. Physicians have not gravitated toward generalist practice despite the obvious overcrowding in many specialty areas. Some believe that in view of such trends, it appears unrealistic to expect that physicians would, in any appreciable numbers, reverse modern trends in professional specialization [14]. If this belief is true, doctors may continue to avoid primary care practices, and it is even more unlikely that well-established specialist physicians would convert to generalist roles in any appreciable numbers. It is possible that the long decline in interest among young physicians in primary care careers and generalist practices may be reversing. However, Kindig and others point out in a recent article, even if the numbers of medical graduates choosing primary care increases significantly, it will take decades before adjustments in training outcomes have an impact on service delivery [15].

In order to achieve a 50-50 balance of physicians in the workforce of the future, the rate of medical school graduates selecting generalist residency programs and entering practice in primary care, a number of presently existing trends would have to change markedly and require an immediate overhaul of medical education structure, financing systems, and practice incentives. Even if these were possible, the nation would not achieve a 50-50% generalist-specialist physician balance by the year 2010. Furthermore, if entry rates into generalist practice remains at current levels, about 20% of medical graduates could select primary care in 1994, the percentage of generalist and primary care physicians in America's medical workforce would fall to less than 25% by 2020 and 20% by 2040 [13].

This prospect raises the question of which type of health care personnel is available or can be made available to provide primary care now and in the near future. Assuming that there would be a shortage of 35,000 generalist physicians by the year 2000, one workforce strategy to compensate for these primary care provider services is a dual using retrained specialist physicians along with expanded utilization of PAs and NPs. Under this scenario, nearly all of the primary care services which would be otherwise 'lost' should the shortage of physician generalists occur, would be covered. If we take 75% as a consensus estimate of the proportion of primary care services which PAs are capable of delivering, the physician-PA substitution ratio becomes .75; in staffing terms, one primary care physician provider is equivalent to one primary care provider equivalent [PCPE]), and a PA would be .75 PCPE.

Using this figure, we can calculate requirements to cover the shortage of 35,000 PCPEs. Taking the conservative estimate that 8% of the predicted 115,000 excess specialists would retrain and enter practice as generalist/ primary care providers, this would add 9200 PCPEs to the workforce by 2000. Utilizing PAs and similar professionals to augment primary care delivery would require 26,250 PCPEs (35,000 x .75 = 26,250 PCPEs). By using PAs and NPs to cover 26,250 PCPE services and a modest contribution from retrained specialists, 35,450 PCPE services would be available to cover the projected physician generalist shortage.

Several workforce impediment exist however, that makes this scenario unlikely. Importantly, the supply expectations of PAs and NPs are unrealistic given small number of annual PA and NP graduates (about 2000 each) and that not all graduates enter primary care practice. Thus, only a fraction of the 26,250 PCPEs required to cover service needs from the primary care physician shortage could be assumed by PAs and NPs. PA graduates enter primary care practices. Assuming that the workforce requirement of 26,250 PCPEs would be met equally (13,125 PAs; 13,125 NPs), educational program output of these professionals would need to increase five-to-six fold from present levels. Therefore, if greater numbers of PAs and NPs are needed for primary care, additional financial support is necessary for programs to boost enrollment. Two additional factors which would affect this scenario are (a) the possible inaccuracy of 8% as the estimate of retrained specialists entering primary care; and (b) a change (increase) in the proportion of U.S. medical graduates selecting primary care residencies.

As physicians become increasingly specialized, moving further away from primary care, PAs and NPs are likely to assume a higher profile in delivering primary care services. This is particularly true in settings such as HMOs, other types of managed care systems, and organized health care systems such as VA, state and federal correctional systems, and the military. Some feel that physicians are no longer in the primary care business and that PAs, working with physician "managers," may be the provider option best equipped to meet future primary care needs. These proponents recommend increasing PA educational output and their utilization in primary care roles [4].

The future for PAs and NPs is likely to be determined by political, economic, and legal factors affecting the evolution of their roles in relation to those of physicians. As our health care system changes from one encompassing a disease-oriented and economically open-ended structure to a more preventive, patient-centered, and cost-conscious direction, PAs and NPs will assume a higher profile. Further evolution of their professional roles will be determined by changing trends in the division of medical labor and public perceptions of physician responsiveness to societal health care problems.

SUMMARY

In the future, America will demand increasing accountability from its health professionals. This new accountability will require adjustments in the educational preparation of our society's health care providers. The PA concept has emerged in American medical practice as a creative and effective approach by which we can augment clinical service gaps in multiple areas. PAs as health professionals have become well integrated into medical practices and have demonstrated remarkable clinical competency and versatility. Expansion of PA utilization is likely to continue in several sectors of the health system.

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Findings

Council on Graduate Medical Education

Ad Hoc Advisory Group on PAs and the Workforce

Responding to its charge from COGME, ACPAW has examined PAs' educational preparation, their current status and professional roles, and the factors affecting the activities and contributions of these health professionals in the U.S. health care workforce. Based on patterns of anticipated demand for PA health providers under health care reform, estimates of PA supply requirements for the health workforce are provided, along with an assessment of the impact of PA utilization, within both primary care and inpatient care settings, on future physician requirements in the workforce. The findings of the Advisory Group are presented under four headings:

- ❑ PA Education
- ❑ PA Practice Characteristics and Patterns
- ❑ Current/Anticipated Demand
- ❑ Barriers to Practice Effectiveness.

PA EDUCATION

1. A variety of effective models has emerged in PA education, all giving emphasis to primary care. PA educational program structure broadly resembles that of medical education in the generalist specialties [1]. The competency-based approach of PA educational curricula contains important elements drawn from the biological, psychological, sociological, and preventive care paradigms [2]. The flexibility within PA educational approaches has resulted in curricula that prepare health care providers responsive to societal health care needs[3,4].

2. The fundamental orientation of PA educational programs is to require demonstration of a standard of clinical competency rather than attainment of a specific academic degree. Allowing for variability among PA programs regarding the terminal degree/ credential awarded has proven an effective approach in preparing health care professionals to assume a wide range of roles in clinical practice settings and specialities, and to qualify for national certification and meet state practice requirements. This approach has also facilitated the recruitment of individuals from diverse ethnic, cultural, and educational backgrounds who return to work in primary care roles in medically needy areas [5,6].

3. PA educational programs have recently accommodated a dramatic expansion of applicants and enrollment due to increased market place demand for PAs [5]. This has strained the existing limited resources available to support PA training within many institutions. A contributing factor has been that federal funding under Title VII authorized grants for PA educational programs has remained essentially level since 1981 [4]. Without increased federal funding support, PA programs will be unable to maintain current enrollment levels or expand training capacities without risking compromises in the quality of student educational experiences.

4. Areas critical for enabling PA educational programs to expand enrollment are: (a) the recruitment, retention and professional development of qualified faculty, in particular faculty from underrepresented minorities; (b) efforts to bolster existing and establish new program linkages with clinical teaching institutions and ambulatory-based clinical practice settings; and (c) effective strategies to recruit, retain and provide increased financial assistance to qualified students representing disadvantaged racial and ethnic groups.

5. Educational experiences that provide interaction among PAs, physicians, and other health care professionals during clinical training promote the team approach in health care delivery [6]. Interdisciplinary educational experiences that promote a better understanding of the PA role on the health care delivery team should be encouraged. The development of educational models featuring physician/PA team approaches in clinical practice is needed.

6. Incentives contained in the Title VII Bureau of Health Professions support for PA educational programs continue to facilitate the recruitment of individuals who enter clinical practice in primary care and medically underserved areas [4,7].

7. The current proportion of individuals from ethnic/racial minorities in the PA profession does not equal the proportions of these groups in the U.S. population. As is the case with physician distribution, this disproportion contributes to health care access problems for minority citizens. While the proportion of ethnic minorities enrolled in PA programs has averaged 18% over the past three years, minorities comprise only 9.3% of all practicing PAs; of these, 3.7% are African American, 3% Hispanic/Latino, 1.9% Asian, and 0.7% American Indian/Alaskan Native [8]. Ethnic minority health care providers are more likely to practice in medically underserved communities and have historically provided leadership to their communities [9]. Federal health professions policies and program strategies supporting the recruitment and retention of ethnic minority and disadvantaged students and program faculty have had only partial success in increasing the number of individuals from these groups in the profession.

8. Current marketplace factors and predicted changes anticipated within health system reform have increased the demand for PA services and stimulated interest among educational and service institutions in developing new programs to train PAs. Efforts to guide and coordinate expansion of PA educational activities are needed.

9. Returning military medical personnel comprised a large segment of the early recruits to PA educational programs. The downsizing of U.S. military forces will increase the number of medically trained and experienced individuals who may be eligible to enter PA programs. Reflecting their higher proportions within the military, PA educational program recruitment efforts should include particular emphasis on veterans from underrepresented minority groups.

PA PRACTICE CHARACTERISTICS

1. A hallmark of PA practice is the demonstrated clinical versatility and flexibility of these health providers in filling unmet needs in health care delivery. PAs function effectively across a broad range of clinical specialties and a diversity of urban and rural practice settings [3,8].

2. PA utilization and clinical practice distribution patterns show significant variation by geographic region [2,8]. Factors contributing to this variation include state medical practice statutes; scope of practice regulations; prescribing authority; location of PA educational programs; policies for program funding; and regional market demand affecting health care personnel.

3. A large number of health services research studies addressing PA contributions to health care delivery consistently demonstrates that these practitioners are capable of performing safely and effectively about 80% of the clinical diagnostic and management services required of physicians in the primary care practice setting [10,13].

4. There is evidence that PA graduates who are recruited from and obtain clinical training in rural and other underserved areas are more likely than other graduates to return to those areas to practice [7].

5. The extensive health care experience prior to entering PA education, and/or additional formal clinical credentials, held by many PA program entrants often enables them to expand the range of services they can provide in medical practices. These experiences, coupled with PA educational preparation, make it possible for PAs to provide physician-complementary clinical services such as health promotion and disease prevention [3,5].

6. The higher proportion of women in the PA profession (compared to rates among physicians) may contribute to expansion of access to health care for women, particularly those who for reasons of culture, personal preference, or ethnic/racial heritage, choose women health care providers [14].

7. In primary care and ambulatory practice settings, the patient care responsibilities of PAs, NPs , and primary care physicians often overlap. In such settings, the roles of PAs and those of NPs are largely interchangeable [10].

CURRENT AND ANTICIPATED DEMAND

1. The demand for PA services in the health professions marketplace is anticipated to expand in the future as part of health reform efforts to promote health access and quality of care and to control costs. Workforce requirements for PA services will include both the primary care and inpatient care/specialty practice sectors [1].

2. Should proposed health care reform measures be adopted which place greater emphasis on managed care and HMOs as systems for primary care delivery, requirements for PAs to serve as primary care providers are likely to increase substantially.

3. Anticipated reductions in physician resident staffing in GME programs will contribute to expanding demand for PA services to help meet personnel requirements on inpatient services in teaching hospitals and academic health centers [1,15]. Further data are needed on the level of PA contributions and staffing potentials in resident-substitution GME roles.

4. Demand for PAs as primary care providers is likely to increase in settings such as correctional health systems, public and private ambulatory clinics, the VA system, and in other health facilities providing primary care services such as student health centers, occupational health sites, and acute care clinics [1,16]

5. The anticipated increase in demand for PA services to help meet the primary care needs of medically underserved populations will require greater numbers of underrepresented minority PAs (African Americans, American Indians/Alaskan Natives, and Hispanics). There is a particular need for African American men.

6. A higher proportion of PAs (34%) practices in rural areas (communities of less than 50,000 population), than do physicians in comparable nonmetropolitan areas (12%) [4,8,9].

7. Increasing PA utilization in the health care system will have a beneficial impact on the capabilities of America's health workforce to provide primary care services and health access. PA contributions will complement health workforce efforts to increase services in primary care.

8. Health services research findings and utilization experiences consistently indicate that PAs are cost-effective health care providers [10,12,13].

PRACTICE BARRIERS

1. The major health care system factors that inhibit the capabilities of PAs to be fully effective in clinical practices are: (a) restrictive state medical practice acts governing scope of practice and supervisory requirements; (b) the absence of PA prescribing authority; and (c) policies of public and private payors regarding coverage of PA services [17,18].

2. Model guidelines for PA practice statutes have been developed by the American Academy of Physician Assistants to address the issue of inconsistent and overly restrictive statutes and regulations. State practice acts which constrain PAs from functioning in roles for which they are qualified by education limit their full effectiveness in delivering health services [15].

3. Federal health care payment policies related to PAs are inconsistent. The lack of uniform reimbursement policies for PA clinical services limits their practice effectiveness. Health practitioners who provide a given service at similar levels of safety, quality, and effectiveness do not receive a uniform payment rate for that service [10,15].

4. Portions of Medicare laws, written before PAs and NPs were added as health care professionals, are a barrier to optimum utilization of these providers. The Medicare program covers outpatient services provided by PAs in rural non-health professional shortage areas and in urban areas only if the services are provided incidental to the physician's service. HCFA regulations require physicians to be on site when PA services are billed under this provision. Because patients may need to be seen at times of the temporary absence of the physician, and since on-site supervision may not be a requirement of state law, this federal criterion is an impediment to the full effectiveness of PAs in providing generalist/primary care services [15,13].

5. Barriers exist affecting the ability of minority health care practitioners to provide health services, particularly to underserved populations. These barriers relate to principles of equity, justice, and morality; the higher morbidity rates; and cultural and language differences that continue to exist in the nation.

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Recommendations

In the future, America will demand increasing accountability from its health care professionals. On a public policy level, a likely outcome of this societal expectation will be improved efforts in planning and coordination of the size, composition and distribution of health workforce personnel. Such efforts will require fundamental changes in approaches in the educational preparation of health care providers. Medical educational curricula for physicians are now changing to extend the traditional biomedical model to encompass behavioral and population-based orientations.

The creation of the PA profession over two decades ago presented medical educators with an opportunity to develop innovative curricular approaches in health practitioner education. In their development, PA educational programs built upon the medical model but were flexible enough to incorporate relevant concepts drawn from multiple disciplines. These disciplines include the behavioral sciences, epidemiology, biostatistics, environmental sciences and ecology, philosophy and ethics, and law. Progressive models of health professions curricula emerged which proved to be effective in educating clinical practitioners whose roles were and continue to be responsive to societal health care needs.

The Advisory Committee on Physician Assistants and the Workforce (AGPAW) of COGME finds that PAs make important contributions to health care delivery in America. PA practice patterns show their responsiveness to societal health care needs, and PAs have effectively complemented physicians as members of the nation's health workforce. PA utilization augments efficiency in clinical practices and increases patient access to health services. To enable PAs to become more effective in the health workforce, AGPAW has identified a number of critical issues facing the PA profession, and based upon these findings, presents recommendations for PAs in the health workforce.

Recommendations

PA EDUCATION

1. Expand the output of PA educational programs from the current level of 1,700/year to 4,000/year by the year 2000, with a goal of expanding the total number of PAs in the health workforce to 40,000 by the turn of the century. Considering various scenarios under health reform, and projections of future PA demand, we conclude that in the future there will be an increasingly strong demand for PAs in America's health system.

2. Increase the level of federal grant support for PA educational programs to $15,550,000 for FY-95, and $19,580,000 for FY-96 to achieve the goal of doubling the number of annual PA graduates. Funding levels should rise proportionately in the following years to accommodate this increase in graduate output.

3. Provide increased funding to expand the supply of PA graduates. Federal grant support should be directed toward specific program areas identified as essential for successful expansion of training capacities. Specific objectives for increased support should include:

- ❑ Expanding enrollment capabilities within existing PA educational programs
- ❑ Targeting support for new educational programs, with incentives for those programs whose mission calls for graduates to serve in practice areas addressing unmet health care needs of populations
- ❑ Increasing the annual number of PA graduates through student support and retention strategies
- ❑ Improving strategies for PA faculty recruitment, retention, and professional development
- ❑ Developing traineeships for PA students linked to service in medically underserved communities
- ❑ Expanding clinical training sites and institutional affiliations

4. Retain primary care as the dominant theme of PA education. Continue Title VII grant program incentives that emphasize a primary care educational focus and maintain funding preferences for programs demonstrating effectiveness in the deployment of PA graduates to primary care practice settings in rural and medically undeserved areas. Increased importance should be placed on the AHEC program requirements relative to sponsorship or linkages with PA educational programs.

5. Provide incentives in Title VII authorized PA grant programs which encourage sponsoring academic institutions to integrate clinical educational experiences among various health professions. The education of future physicians should include familiarizing them with PAs and their clinical roles. Physician training should also include practice management systems utilizing contributions from a variety of health professions. The funding priority for team training of medical students/residents with PA students should be reinstated in grant programs supporting residency training in family medicine, general internal medicine, and general pediatrics.

6. Include incentives in federal grants supporting PA educational programs to reward, maintain, and improve efforts in the recruitment and retention of students and faculty from minority and disadvantaged racial/ethnic groups. Funding incentives should be offered to stimulate programs to develop innovative and effective methods of informing those individuals and agencies who provide career advice to students, such as high school teachers/guidance counselors/career advisors. Institutional employers of PAs should be encouraged to include PA students among those eligible for tuition support-future service plans. Grant incentives should also provide rewards for those PA programs that lack a proportionate representation from underrepresented racial/ethnic groups but that can demonstrate an increase in the absolute number of individuals from these groups among enrolled students and graduates.

7. Provide incentives in federal PA and other grant programs to encourage the recruitment of PA students from rural areas, and the use of rural preceptorships that facilitate the return of these graduates to rural practice.

8. Recommend that the Secretary of Health and Human Services develop a plan encouraging PA educational programs to recruit and retrain honorably discharged military medical service personnel, particularly those from underrepresented racial/ethnic groups. The plan would oblige military veteran PA students to repay educational stipends by serving, upon graduation, in either a National Health Service Corps setting, or as faculty in a PA educational program. If effective, expand eligibility of plan to include individuals with extensive civilian health backgrounds.

9. Promote health services research examining PA clinical effectiveness, patient outcomes, and resident-substitution ratios when utilized in GME staffing positions.

PA PRACTICE CHARACTERISTICS

1. Increase National Health Service Corps scholarships and loan repayment programs supporting PA students in accredited educational programs.

2. Promote research examining recent trends in PA practice, their evolving clinical roles, and key productivity/economic/demand factors. These data are needed for future health workforce planning and policy development. Examples of research areas to receive more attention should include:

- ❑ physician-PA substitutability ratios and task delegation levels in primary care, managed care, and teaching hospital settings;
- ❑ comparisons of PA practice performance and contributions in primary care delivery with those of physicians and other health practitioners;
- ❑ economic aspects of PA practice;
- ❑ factors contributing to minority attrition in PA educational programs.

3. Increase available funding for health services research, through federal agencies such as the Agency for Health Care Policy and Research and the Office of Health Professions Analysis and Research within the Bureau of Health Professions, HRSA, aimed at providing up to date information and analysis regarding the characteristics and trends of PA practice, economic and outcome measures of PA clinical performance, and determination of future supply and health workforce requirements.

CURRENT AND ANTICIPATED DEMAND

1. Include PAs in future national and state health workforce planning activities and ensure that these plans provide for the effective utilization of physicians and PAs, NPs, and CNMs.

2. Convene a task force sponsored by the Bureau of Health Professions to include representatives of COGME and ACPAW, and the National Advisory Council on Nurse Education and Practice and its Advisory Group for Workforce Projections of Nurse Practitioners and Nurse Midwives. The purpose of this task force should be to integrate projections for requirements of the mix of physicians, PAs and NPs in the Nation's workforce.

3. Allocate, as suggested under health care reform, a portion of funds to subsidize health professions clinical education collected from an all-payors pool, as well as from other legislatively-derived funding sources such as the Medicare trust fund, to support PA education. Eligibility for Medicare DME funds should include support for the clinical education of PAs and similar health professionals, and should be based on the extent to which these providers contribute to increasing primary care delivery.

4. Offer incentives to academic health centers to sponsor PA educational programs and/or provide clinical training to PA students within teaching hospital settings; encourage academic health centers not currently sponsoring PA programs to expand their clinical teaching activities to include PA students.

5. Develop federal policy to provide support and encouragement for mechanisms to increase representation from racial and ethnic minorities in the PA profession.

6. Encourage health care payors to offer incentives, such as bonus payments, to clinical practices which extend health care access to medically underserved populations by employing PAs.

PRACTICE BARRIERS

1. Amend Medicare Part B law to authorize payment in: (a) all practice settings, and (b) at one uniform rate. Encourage all state Medicaid programs to cover PA services and to use a uniform payment rate for all health providers. Suggest that private health insurers reimburse for PA clinical services.

2. Encourage states to provide a more uniform regulatory climate for PAs to delete overly restrictive practice statutes and regulations. State licensing boards should adopt more uniform and nonrestrictive regulations governing scope of practice and prescribing authority to permit the maximum utilization of PAs in clinical practices. To address the issue of inconsistent and overly restrictive practice statutes and regulations, states are encouraged to consider the model PA practice statute developed by the American Academy of Physician Assistants.

3. Expand efforts to insure that the racial/ethnic composition of the PA population reflects the overall population's diversity.

List of Exhibits

Appendix A

Milestones of the PA Profession

1961 Concept of the PA first suggested by Charles Hudson, MD, then-President of the National Board of Medical Examiners, in an address to the House of Delegates of the American Medical Association, and later published in an article in JAMA

1965 First educational program for physician assistants founded by Eugene Stead, MD, and E. Harvey Estes, MD, at Duke University Medical School

1966 Founding of Child Health Associate Program at the University of Colorado by Henry Silver, MD

1968 American Academy of Physician Assistants (AAPA) founded Association of Physician Assistant Programs (APAP) founded

1969 MEDEX Northwest PA program founded at the University of Washington by Richard Smith, MD, MPH

First state medical statute recognizing PA practice passed in Colorado

1970 Kaiser Permanente Northwest becomes first HMO to employ a PA

1971 Endorsement of the PA concept by the American Medical Association House of Delegates Approval of PA educational program "Essentials" and process of accreditation by AMA Committee on Allied Health Education and Accreditation

1972 Passage of Comprehensive Health Manpower Training Act (P.L. 92-157) authorizing support for PA educational programs under Title VII of the Public Health Services Act

Publication of the first book on the PA profession:The *Physician Assistant Today and Tomorrow,* by Sadler, Sadler, and Bliss

1973 Establishment of the National Commission on Certification of Physician Assistants (NCCPA) Initial administration of the Physician Assistant National Certifying Examination (PANCE)

1975 *The Physician Assistant,* by Loretta Ford

1976 Continuation of federal support for PA educational programs under the Health Professions Educational Assistance Act (P.L. 94-484)

The New Health Professionals, by Ann A. Bliss and Eva Cohen

1977 Passage of Rural Health Clinic Services Act (P.L. 95-210) providing Medicare and Medicaid reimbursement for PAs employed in these settings

1978 U.S. Air Force is first military branch to commission PAs as officers

Institute of Medicine (IOM) Report "Manpower Policy for Primary Care" recommending an increse in the number of PAs and NPs to strengthen primary care delivery

The Physician Assistant: Innovation in the Division of Medical Labor by Eugene Schneller

1981 Report of the Graduate Medical Education National Advisory Committee (GMENAC) projecting an excess future supply of physicians and temporarily dimmed workforce prospects for PAs and NPs

Physician Assistants: Their Contribution to Health Care, by Henry B. Perry and Bina Breitner

Role of the Physician Assistant *in Primary Care,* by Judith Greenwood

1984 *Alternatives in Health Care Delivery: Emerging Roles for Physician Assistants,* by Reginald D. Carter and Henry B. Perry

1985 Passage of Health Professions Training Assistance Act (P.L.-99-129) requiring PA educational program emphasis in primary care areas

1986 Passage of Omnibus Budget Reconciliation Act (P.L. 99-509) authorizing Medicare reimbursement for PA services in hospitals and other settings

Physician Assistants: Present and Future Models of Utilization, edited by Sarah Zarbock and Kenneth Harbert

1987 *The Physician* Assistant *in a Changing Health Care Environment,* by Gretchen E. Schafft and James F. Cawley

1988 Inaugural issue of Journal of the American Academy of Physician Assistants

1990 Passage of National Health Service Corps Revitalization Amendments (P.L. 101-597) authorizing NHSC scholarship eligibility for PA students

First Annual Census on Physician Assistants report published by American Academy of Physician Assistants

1991 U.S. Navy commissions PAs as officers

1992 U.S. Army and Coast Guard commissions PAs as officers

1993 *The Roles of Physician Assistants and Nurse Practitioners in Primary Care* edited by D. Kay Clawson and Mirian Osterweis

Council on Graduate Medical Education commissions the Advisory Group on Physician Assistants and the Workforce to project future supply numbers and workforce requirements for PAs

SOURCE: Hooker, RS., Cawley, RF, 1994.

Appendix B

Physician Assistant Educational Programs in the United States, 1994

ALABAMA

University of Alabama at Birmingham School of Health Related Professions Birmingham, AL	Surgeon Assistant Program	BS + Cert

CALIFORNIA

Charles Drew University of Medicine and Science, School of Allied Health Los Angles, CA	Physician Assistant Program	BS + Cert
University of Southern California School of Medicine Los Angeles, CA	Primary Care Physician Assistant Program	BS
College of Osteopathic Medicine of the Pacific Pomona, CA	Physician Assistant Program	Cert
University of California, Davis School of Medicine Sacramento, CA	Physician Assistant Program	Cert
Stanford University and Foothill College School of Medicine Palo Alto, CA	Primary Care Associate Program	Cert

COLORADO		
University of Colorado School of Medicine Denver, CO	Child Health Associate Program	MS + Cert or BS + Cert
CONNECTICUT		
Yale University School of Medicine New Haven, CT	Physician Associate Program	Grad Cert *
DISTRICT OF COLUMBIA		
The George Washington University School of Medicine and Health Sciences Washington, DC	Physician Assistant Program	MS or BS + Cert
	Physician Assistant/Master of Public Health Program	MPH
Howard University Howard University Hospital Washington, DC	Physician Assistant Program	BS + Cert
FLORIDA		
University of Florida College of Medicine Gainesville, FL	Physician Assistant Program	BS in Med
Nova Southeastern University of the Health Sciences College of Allied Health Professions North Miami Beach, FL	Physician Assistant Program	BS

GEORGIA		
Emory University School of Medicine Atlanta, GA	Physician Assistant Program	MMS
Medical College of Georgia School of Medicine Augusta, GA	Physician Assistant Program	BS
ILLINOIS		
Malcolm X College/Cook County Hospital, Health Services Institute Chicago, IL	Physician Assistant Program	AS or Cert
Midwestern University School of Osteopathic Medicine Downers Grove, IL	Physician Assistant Program	BS
Finch University of Health Sciences/ Chicago Medical School North Chicago, IL	Physician Assistant Program	MS
IOWA		
University Iowa School of Medicine Iowa City, IA	Physician Assistant Program	MS in PA
University of Osteopathic Medicine & Health Sciences Des Moines, IA	Physician Assistant Program	BS + Cert

KANSAS		
Wichita State University College of Health Professions Wichita, KS	Physician Assistant Program	BS
KENTUCKY		
University of Kentucky College of Allied Health Professions Lexington, KY	Physician Assistant Program	BS
MARYLAND		
Essex Community College Division of Allied Health Baltimore, MD	Physician Assistant Program	AS
MASSACHUSETTS		
Northeastern University Tufts University College of Pharmacy and Health Sciences Boston, MA	Physician Assistant Program	MHP * * Cert
MICHIGAN		
University of Detroit Mercy Detroit, MI	Physician Assistant Program	MS
Western Michigan University School of Allied Health Professions Kalamazoo, MI	Physician Assistant Program	BS or Cert

MISSOURI		
St. Louis University School of Allied Health Professions St. Louis, MO	Physician Assistant Program	BS + Cert
NEBRASKA		
University of Nebraska College of Medicine Omaha, NE	Physician Assistant Program	MS in PA + Cert
NEW JERSEY		
Rutgers University-University of Medicine & Dentistry of New Jersey Robert Wood Johnson Medical School Piscataway, NJ	Physician Assistant Program	BS, or Cert
NEW YORK		
Albany Medical College/Hudson Valley Community College Albany, NY	Physician Assistant Program	AS + Cert
Brooklyn Hospital Center/Long Island University, School of Allied Health Brooklyn, NY	Physician Assistant Program	BS + Cert
Bayley Seton Hospital St. Johns University/Wagner College College of Staten Island Staten Island, NY	Physician Assistant Program	Cert

Cornell University School of Medicine New York, NY	Surgeon Assistant Program	Cert
C.U.N.Y. of New York/Harlem Hospital School of Health Services New York, NY	Physician Assistant Program	BS + Cert
S.U.N.Y. @ Stony Brook School of Health, Technology, and Management/Health Sciences Center Stony Brook, NY	Physician Assistant Program	BS
S.U.N.Y. @ Brooklyn Health Sciences Center Brooklyn, NY	Physician Assistant Program	BS or Cert
Touro College School of Health Sciences Dix Hills, NY	Physician Assistant Program	BS

NORTH CAROLINA

Duke University School of Medicine Durham, NC	Physician Assistant Program	MHS + Cert
Wake Forest University Bowman Gray School of Medicine Winston-Salem, NC	Physician Assistant Program	Cert

NORTH DAKOTA		
University of North Dakota CertSchool of Medicine Grand Forks, ND	Physician Assistant Program	
OHIO		
Kettering College of Medical Arts Kettering, OH	Physician Assistant Program	AS
Cuyahoga Community College Division of Allied Health Parma, OH	Physician Assistant Program Surgeon Assistant Program	AS AS
OKLAHOMA		
University of Oklahoma School of Medicine/Health Sciences Center Oklahoma City, OK	Physician Associate Program Postgraduate PA Program in Occupational Medicine #	BS MPH
PENNSYLVANIA		
Gannon University Erie, PA	Physician Assistant Program	BS
St. Francis College Division of PA Studies Loretto, PA	Physician Assistant Program Master of Medical Science # Physician Assistant Program	BS or Cert MS
Hahnemann University School of Health Sciences and Humanities Philadelphia, PA	Physician Assistant Program	BS or Cert

King's College Wilkes-Barre, PA	Physician Assistant Program	BS + Cert
Duquesne University Rangos School of Health Sciences Pittsburgh, PA	Physician Assistant Program	MS + Cert
TENNESSEE		
Trevecca Nazarene College Nashville, TN	Physician Assistant Program	BS or Cert
TEXAS		
University of Texas-Southwestern Medical Center School of Allied Health Dallas, TX	Physician Assistant Program	BS + Cert
University of Texas Medical Branch School of Allied Health Sciences Galveston, TX	Physician Assistant Program	BS + Cert
Baylor College of Medicine College of Medicine Houston, TX	Physician Assistant Program	MS + Cert
UTAH		
University of Utah School of Medicine Salt Lake City, UT	Physician Assistant Program	Cert

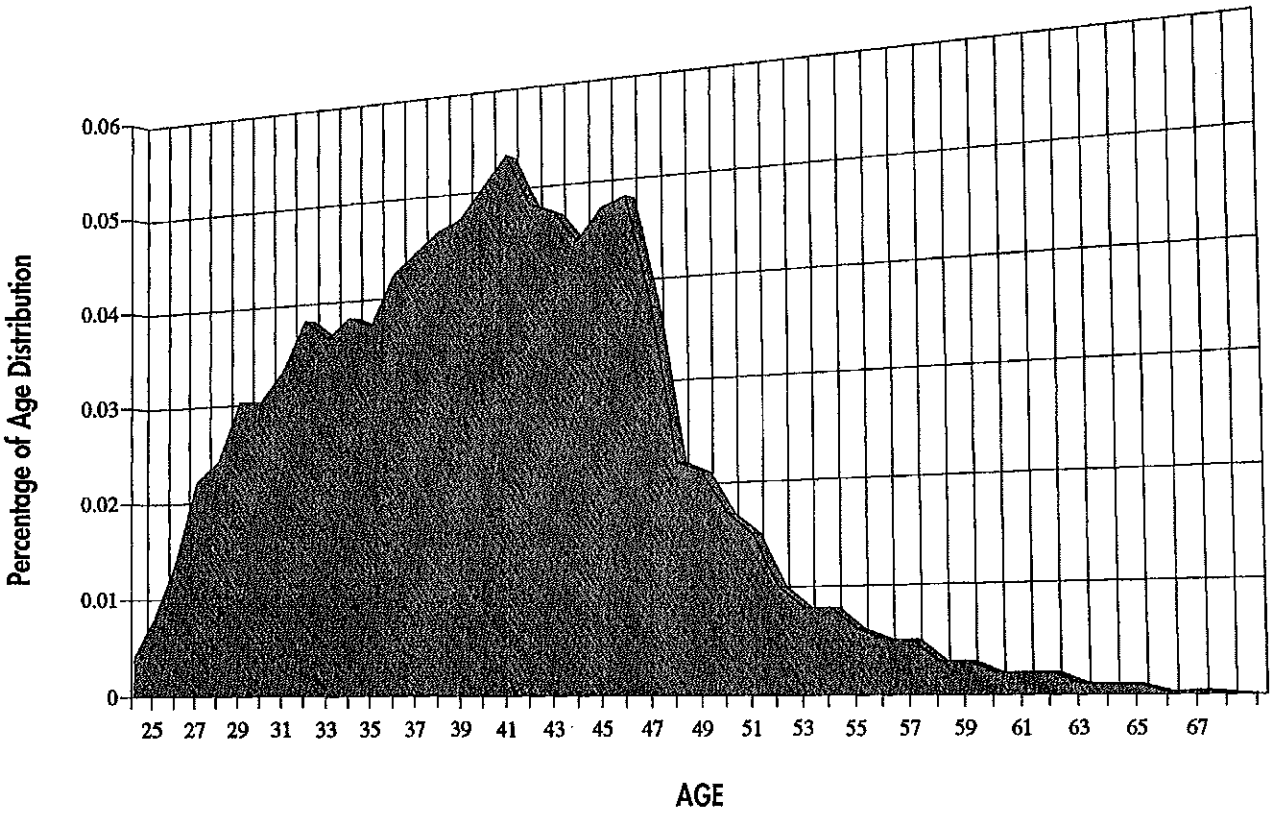
WASHINGTON		
University of Washington School of Public Health Seattle, WA	MEDEX Northwest Physician Assistant Program	Cert
WEST VIRGINIA		
Alderson-Broaddus College Department of Physician Assistant Studies Philippi, WV	Physician Assistant Program Emergency Medicine Program # MS Rural Primary Care Program # MS	BS
WISCONSIN		
University of Wisconsin/Madison School of Medicine Madison, WI	Physician Assistant Program	BS
UNIFORMED SERVICES		
U.S. Air Force Sheppard Air Force Base, TX	Physician Assistant Program	BS
U.S. Army Academy of Health Sciences Fort Sam Houston, TX	Physician Assistant Program	BS
U.S. Navy Naval School of Health Sciences San Diego, CA	Physician Assistant Program	BS

LEGEND AND NOTES

Included are Physician Assistant Educational Programs holding accreditation status through the Committee on Accreditation of Allied Health Educational Programs (CAAHEP) as of July 1994. The 59 programs listed include 56 Physician assistant and 3 surgeon assistant programs. Programs are listed by state, institutional sponsorship, program title, and credential(s) awarded. CAAHEP) accreditation denotes that a PA educational program is in compliance with educational standards and criteria as defined in the "Essentials for an Accredited Educational Program for the Physician Assistant." Credentials Cert = Certificate of Completion of Physician Assistant educational program. AS = all academic associate's degrees awarded for physician assistant education - associate in science [AS] BS = all academic bachelor's degrees awarded for physician assistant education - bachelor of science [BS], bachelors in medicine [BM], other bachelors. MS = includes masters degrees currently awarded for completion of PA education: [Master of Science in Physician Assistant [MS in PA], Master of Medical Science [MMS], Master of Health Science [MHS], Master in Physician Assistant [MPA], and Master of Health Professions [MHP]. List also includes institutions who sponsor masters degree tracks or joint degree offerings for PA graduates. These programs grant either the master of science [MS] degree, the master of medical science [MMS] degree, or the master of public health [MPH] degree. Cert = Certificate of completion of physican assistant educational program. graduate Level Certificate ~ Master of Health Professions degree option # Programs offering special masters degree tracks/curricula; these programs select PA graduates and are not formally accredited by CAAHEP.

Appendix C

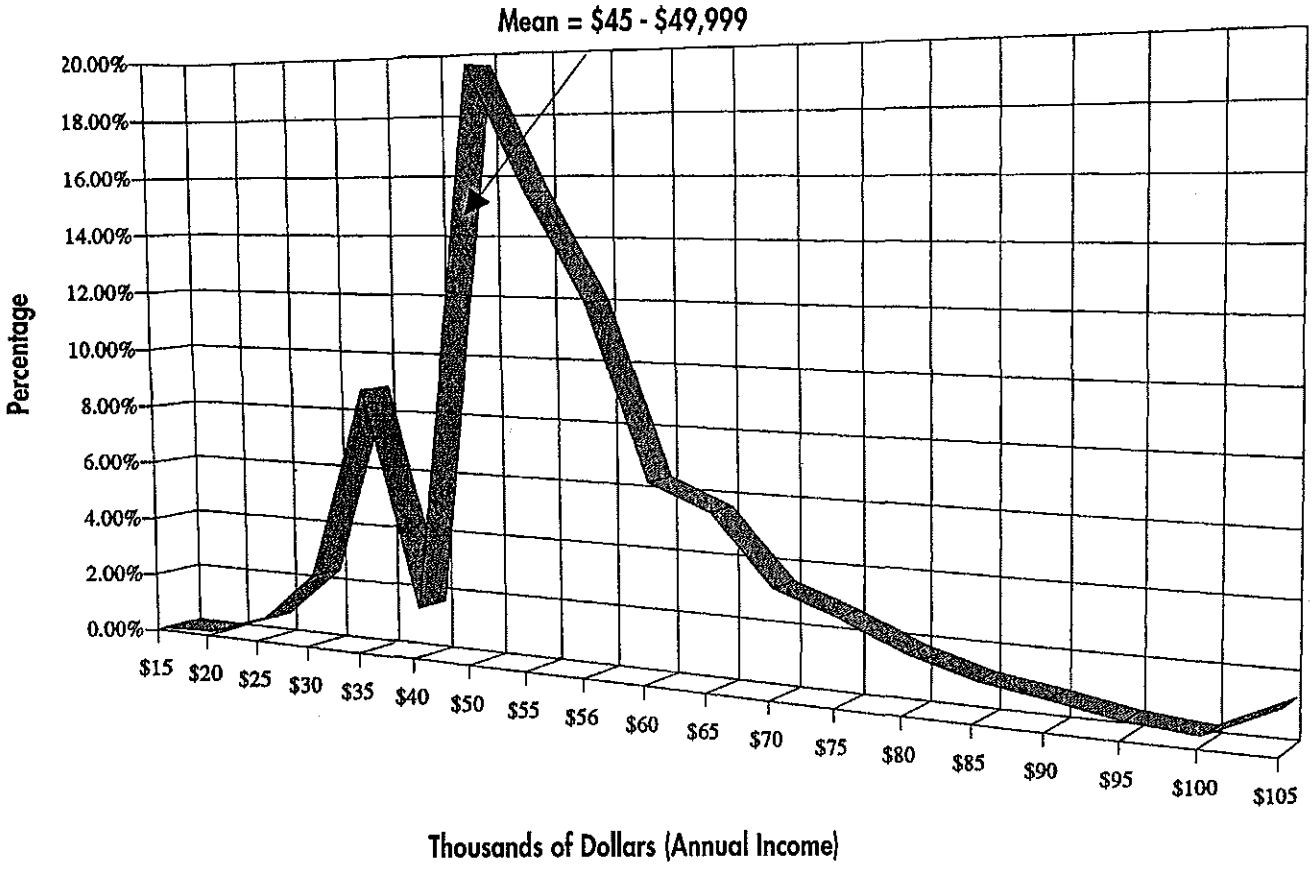
Age Distribution of Physician Assistants 1993



Source: AAPA 1992

Appendix D

Physician Assitant Salary 1993



Source: AAPA 1992 Census

Appendix E

American Academy of Physician Assistants

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COMMENTARY ON MODEL STATE LEGISLATION FOR PHYSICIAN ASSISTANTS

The model legislation reflects two principal concepts: 1) physician assistant licensure; and 2) scope of practice determined by supervising physicians.

Licensure is the most desirable terminology because many other laws within the state will contain references to "licensed practitioners" and this can eliminate future problems for recognition of PA services. It also helps defend PAs against charges that they are "not even licensed." As of mid-1993, at least 16 states use the term "license" in their PA statutes.

The critical structure to achieve, as reflected in the bill, is a system in which a PA presents his or her credentials to the state regulatory agency and receives a piece of paper in return. The paper (license or certificate) is renewable, based on meeting state requirements. Obtaining the paper should occur independently of a PA's employment status. An analogy is a driver's license — you get one even before you buy a car so that you can start driving as soon as you're ready. This system should be attractive to licensing boards in that it eliminates a lot of paperwork. Many of the original laws required PAs to submit all transcripts, test scores, references, etc.. every time they changed employers or supervisors. Under such a system, a PA legally ceases to exist between jobs.

The model legislation does not propose a rigorous procedure for state approval of supervising physicians. It proposes that licensed PAs and licensed physicians simply notify the state regulatory board of their intent to work together.

In addition, the scope of practice for PAs is entirely dependent on what the physician wishes to delegate. This is consistent with the original concept of PA utilization. Since the 1970s the pendulum has been allowed to swing toward over regulation; in some states it is now returning to a more reasonable position. The model law supports this movement away from micro-management of physician/ PA practices.

The model bill allows physicians to delegate unlimited prescriptive authority, as well as limited dispensing authority. It clarifies a PA's ability to request, receive and distribute drug samples.

The particulars of supervision in this legislation are left entirely to the physician/ PA team, although it is stated quite clearly that the physician need not be physically on the premises so long as the PA and physician can contact one another easily.

The "Optional Replacement Parts" are offered as substitutes for some of the above. If it is not feasible to adopt a totally delegatory system, language is proposed to give the licensing board more control over the supervising physician and PA (see "Practice Agreement"). This section would replace "Supervising Physician" and "Notification of Intent to Practice" and possibly other language.

If a description of PA scope of practice must be included, an alternative section is proposed that hopefully would discourage the development of list of tasks. This optional replacement section would replace "Scope of Practice-Delegatory Authority," although retaining the paragraph that describes PAs as agents of physicians is recommended.

Locum tenens language is not necessary in the original model bill. However, if the "Practice Agreement" concept is included—that is, placing the green light for practice in the hands of the board as opposed to keeping it in the practitioners' hands—then the recommended section on locum tenens may be included. The definition of locum tenens should be inserted in the "Definitions" section, and the rest of the locum tenens provision placed elsewhere in the bill.

The final set of options deals with forms the regulatory authority may take: total control by the medical licensing board without PA input; a voting PA on the board; a separate PA board; and the most popular model, medical board regulation with a PA committee.

This model law was drafted by the AAPA State Technical Advisory Group (Beverly Frye Freeman, PA-C, and Jim Reid, PA-C) and government affairs director Nicole Gara in October 1991. It was reviewed and slightly revised by the AAPA Government Affairs Council in November 1991. A technical change was made in July 1993 to acknowledge the transformation of CAHEA into a new allied health accrediting organization independent of the AMA.

The AAPA government affairs division is available to work on revisions and additions, as needed, and to explain what and why the model bill contains what it does. The model law could not be written in a way that would be instantly compatible with all state codes, but the concepts are clear and can be transformed by legislative counsel into the appropriate style and format.

Nicole Gara, Director

Government and Professional Affairs

American Academy of Physician Assistants

April 1994

MODEL STATE LEGISLATION — PHYSICIAN ASSISTANTS

DEFINITIONS

"Physician assistant" means a person who has graduated from a physician assistant or surgeon assistant program accredited by the American Medical Association's Committee on Allied Health Education and Accreditation or by its successor agency, and/or a person who has passed the certifying examination administered by the National Commission on Certification of Physician Assistants.

"Board" means the Medical Licensing Board.

"Supervising physician" means an MD or DO licensed by the board who supervises physician assistants.

"Supervision" means overseeing the activities of, and accepting responsibility for, the medical services rendered by a physician assistant. The constant physical presence of the supervising physician is not required so long as the supervising physician and physician assistant are or can be easily in contact with one another by radio, telephone, or other telecommunication device.

QUALIFICATIONS FOR LICENSURE

Except as otherwise provided in this chapter, an individual shall be licensed by the board before the individual may practice as a physician assistant.

The board may grant a license as a physician assistant to an applicant who:

1) submits an application on forms approved by the board;

2) pays the appropriate fee as determined by the board;

3) has successfully completed an educational program for physician assistants or surgeon assistants accredited by the Committee on Allied Health Education and Accreditation or by its successor agency, and/or has passed the Physician Assistant National Certifying Examination administered by the National Commission on Certification of Physician Assistants;

4) certifies that he or she is mentally and physically able to engage safely in practice as a physician assistant;

5) has no licensure, certification, or registration as a physician assistant under current discipline, revocation, suspension or probation for cause resulting from the applicant's practice as a physician assistant, unless the board considers such condition and agrees to licensure;

6) is of good moral character;

7) submits to the board any other information the board deems necessary to evaluate the applicant's qualifications; and

8) has been approved by the board.

TEMPORARY LICENSE

(a) The board may grant a temporary license to an applicant who meets the qualifications for licensure except that the applicant has not yet taken the national certifying examination or the applicant has taken the national certifying examination and is awaiting the results.

A temporary license is valid:

1) for one year from the date of issuance;

2) until the results of an applicant's examination are available; or

3) until the board makes a final decision on the applicant's request for licensure; whichever comes first. The board may extend a temporary license, upon a majority vote of the board members, for a period not to exceed one year. Under no circumstances may the board grant more than one extension of a temporary license.

(b) A temporary license may be granted to an applicant who meets all the qualifications for licensure but is awaiting the next scheduled meeting of the board.

INACTIVE LICENSE

Any physician assistant who notifies the board in writing on forms prescribed by the board may elect to place his or her license on an inactive status. A physician assistant with an inactive license shall be excused from payment of renewal fees and shall not practice as a physician assistant. Any licensee who engages in practice while his or her license is lapsed or on inactive status shall be considered to be practicing without a license, which shall be grounds for discipline under section of this Act. A physician assistant requesting restoration from inactive status shall be required to pay the current renewal fee and shall be required to meet the criteria for renewal as specified in section of this Act.

RENEWAL

Each person who holds a license as a physician assistant in this state will, upon notification from the board, renew said license by:

1) submitting the appropriate fee as determined by the board;

2) completing the appropriate forms; and

3) meeting any other requirements set forth by the board.

EXEMPTION FROM LICENSURE

Nothing herein shall be construed to require licensure under this Act of:

1) a physician assistant student enrolled in a physician assistant or surgeon assistant educational program accredited by the Committee on Allied Health Education and Accreditation or by its successor agency;

2) a physician assistant employed in the service of the federal government while performing duties incident to that employment; or

3) technicians, other assistants or employees of physicians who perform delegated tasks in the office of a physician but who are not rendering services as a physician assistant or identifying themselves as a physician assistant.

SCOPE OF PRACTICE - DELEGATORY AUTHORLTY - AGENT OF SUPERVISING PHYSICIAN

Physician assistants practice medicine with physician supervision. Physician assistants may perform those duties and responsibilities, including the prescribing and dispensing of drugs and medical devices, that are delegated by their supervising physician(s).

Physician assistants shall be considered the agents of their supervising physicians in the performance of all practice-related activities, including but not limited to, the ordering of diagnostic, therapeutic and other medical services.

PRESCRIPTIVE AUTHORLTY

A physician assistant may prescribe, dispense and administer drugs and medical devices to the extent delegated by the supervising physician.

Prescribing and dispensing of drugs may include Schedule II through V substances as described in [the state controlled drug act] and all legend drugs.

All dispensing activities of physician assistants shall:

1) comply with appropriate federal and state regulations; and

2) occur when pharmacy services are not reasonably available, or when it is in the best interests of the patient, or when it is an emergency.

Physician assistants may request, receive, and sign for professional samples and may distribute professional samples to patients.

SUPERVISION

Supervision shall be continuous but shall not be construed as necessarily requiring the physical presence of the supervising physician at the time and place that the services are rendered.

It is the obligation of each team of physician(s) and physician assistant(s) to insure that the physician assistant's scope of practice is identified; that delegation of medical tasks is appropriate to the physician assistant's level of competence; that the relationship of, and access to, the supervising physician is defined; and that a process for evaluation of the physician assistant's performance is established.

SUPERVISING PHYSICIAN

A physician wishing to supervise a physician assistant must:

1) be licensed in this state;

2) notify the board of his intent to supervise a physician assistant;

3) submit a statement to the board that he will exercise supervision over the physician assistant in accordance with any rules adopted by the board and that he will retain professional and legal responsibility for the care rendered by the physician assistant.

NOTIFICATION OF INTENT TO PRACTICE

A physician assistant licensed in this state, prior to initiating practice, will submit, on forms approved by the board, notification of such intent. Such notification shall include:

1) the name, business address, and telephone number of the supervising physician(s); and

2) the name, business address, and telephone number of the physician assistant.

A physician assistant will notify the board of any changes or additions in supervising physicians within ___ days.

SATELLITE SETTINGS

Nothing contained herein shall be construed to prohibit the rendering of services by a physician assistant in a setting geographically remote from the supervising physician.

EXCLUSIONS OF LIMITATIONS ON EMPLOYMENT

Nothing herein shall be construed to limit the employment arrangement of a physician assistant licensed under this Act.

ASSUMPTION OF PROFESSIONAL LIABILITY

If a physician assistant is employed by a physician or group of physicians, the physician assistant shall be supervised by and be the legal responsibility of the employing physician(s). The legal responsibility for the physician assistant's patient care activities shall remain that of the employing physician(s), including when the physician assistant provides care and treatment for patients in health care facilities.

If a physician assistant is employed by a health care facility or other entity, the legal responsibility for the physician assistant's actions or omissions shall be that of the employing facility or entity. Physician assistants employed by such facilities shall be supervised by licensed physicians.

VIOLATIONS

The board may, following the exercise of due process, discipline any physician assistant who:

1) fraudulently or deceptively obtains or attempts to obtain a license;

2) fraudulently or deceptively uses a license;

3) violates any provision of this chapter or any regulations adopted by the board pertaining to this chapter;

4) is convicted of a felony;

5) is a habitual user of intoxicants or drugs to such an extent that he or she is unable to safely perform as a physician assistant;

6) has been adjudicated as mentally incompetent or has a mental condition that renders him or her unable to safely perform as a physician assistant;

7) has committed an act of moral turpitude; or

8) represents himself or herself as a physician.

DISCIPLINARY AUTHORITY

The board, upon finding that a physician assistant has committed any offense described in section ___ , may:

1) refuse to grant a license;

2) administer a public or private reprimand;

3) revoke, suspend, limit, or otherwise restrict a license;

4) require a physician assistant to submit to the care or counseling or treatment of a physician or physicians designated by the board;

5) suspend enforcement of its finding thereof and place the physician assistant on probation with the right to vacate the probationary order for noncompliance;

6) restore or reissue, at its discretion, a license and impose any disciplinary or corrective measure which it may have imposed.

TITLE AND PRACTICE PROTECTION

Any person not licensed under this Act is guilty of a [felony or misdemeanor] and is subject to penalties applicable to the unlicensed practice of medicine if he or she:

1) holds himself or herself out as a physician assistant;

2) uses any combination or abbreviation of the term "physician assistant" to indicate or imply that he or she is a physician assistant; or

3) acts as a physician assistant without being licensed by the board.

An unlicensed physician shall not be permitted to use the title of "physician assistant" or to practice as a physician assistant unless he or she fulfills the requirements of this [act].

IDENTIFICATION REQUIREMENTS

Physician assistants licensed under this Act shall keep their license available for inspection at their primary place of business and shall, when engaged in their professional activities, wear a name tag identifying themselves as a "physician assistant."

RULE MAKING AUTHORITY

The board shall promulgate, in accordance with the provisions of the [state] Administrative Procedures Act, all rules that are reasonable and necessary for the performance of the various duties imposed upon the board by the provisions of this Act, including but not limited to:

1) setting licensure fees;

2) establishing renewal dates.

OPTIONAL REPLACEMENT PARTS FOR MODEL LEGISLATION

SUPERVISING PHYSICIAN - PRACTICE AGREEMENT

Any physician licensed in this state may apply to the board for permission to supervise a physician assistant. The application shall be jointly submitted by the physician and the physician assistant(s) and may be accompanied by a fee as determined by the board.

The joint application shall describe the manner and extent to which the physician assistant will practice and be supervised, including identification of additional licensed physicians who will supervise the physician assistant; the education, training and experience of the primary supervisor and the physician assistant; and other such information as the board may require.

The board may approve, modify or reject such applications.

Whenever it is determined that a physician or physician assistant is practicing in a manner inconsistent with the approval granted, the board may demand modification of the practice, withdraw approval of the practice agreement or take other disciplinary action as defined in section ___ of this Act.

PHYSICIAN ASSISTANT SCOPE OF PRACTICE

The practice of a physician assistant shall include medical services within the education, training and experience of the physician assistant that are delegated by the supervising physician.

Medical services rendered by physician assistants may include, but are not limited to: 1) obtaining patient histories and performing physical examinations; 2) ordering and/or performing diagnostic and therapeutic procedures; 3) formulating a diagnosis; 4) developing and implementing a treatment plan; 5) monitoring the effectiveness of therapeutic interventions; 6) assisting at surgery; 7) offering counseling and education to meet patient needs; and 8) making appropriate referrals.

The activities listed above may be performed in any setting authorized by the supervising physician, including but not limited to: clinics; hospitals; ambulatory surgical centers; patient homes; nursing homes; and other institutional settings.

LOCUM TENENS PERMIT

The board may grant a locum tenens permit to any applicant who is licensed in the state. The permit may be granted by an authorized representative of the board. Such applications for locum tenens permits will be reviewed at the next scheduled board meeting. The maximum duration of a locum tenens permit is one year. The permit may be renewed annually on a date set by the board.

Definition: "Locum tenens means the temporary provision of services by a substitute provider."

REGULATORY OPTIONS

I. Regulation by the medical board

The state board of medical examiners shall administer the provisions of this Act under such procedures as it considers advisable and may adopt rules that are reasonable and necessary to implement the provisions of this Act.

II. Regulation by a PA board

To administer this Act there is hereby established a Board of Physician Assistant Examiners. The board shall consist of five members appointed by the governor, each of whom shall be residents of this state, four of whom shall be physician assistants who meet the criteria for licensure as established by this Act and one of whom shall be a licensed physician experienced in supervising physician assistants.

Initial appointments shall be made as follows: 1) two members shall be appointed for terms of four years; 2) one member shall be appointed for a term of three years; 3) one member shall be appointed for a term of two years; and 4) one member shall be appointed for a term of one year. Each regular appointment thereafter shall be for an term of four years. Any vacant term shall be filled by the governor for the balance of the unexpired term. No member shall serve more than two consecutive four-year terms and each member shall serve on the board until his or her successor is appointed.

While engaged in the business of the board, each member shall receive a per diem of $ _ and shall also receive compensation for actual expenses paid in accordance with [other state regulations].

The board shall elect a chairperson and a secretary from among its members at the first meeting of each fiscal year. The board shall meet on a regular basis. A board meeting may be called upon reasonable notice at the discretion of the chairperson and shall be called at any time upon reasonable notice by a petition of three board members to the chairperson.

Powers and duties of the board shall include:

1) promulgation of all rules reasonable and necessary to implement the provisions of this Act; 2) review and approval or rejection of applications for licensure; 3) review and approval or rejection of applications for renewal; 4) issuance of all licenses; 5) denial, suspension, revocation or other discipline of a licensee; 6) determination of the amount and collection of all fees.

III. Regulation by a medical board with a PA advisory committee

There is hereby created a physician assistant committee which shall review and make recommendations to the board regarding all matters relating to physician assistants that come before the board. Such matters shall include, but not be limited to: 1) applications for licensure; 2) practice agreements; 3) disciplinary proceedings; 4) renewal requirements; and 5) any other issues pertaining to the regulation and practice of physician assistants in this state.

COMMITTEE MEMBERSHIP

The committee shall consist of three physician assistants, one physician experienced in supervising physician assistants, and one member of the board. All committee members must be residents of this state and hold a license in good standing in their respective disciplines.

The chairperson of the committee shall be elected by a majority vote of the committee members.

Committee members shall receive reimbursement for time and travel expenditures [consistent with usual state practices]. *Appointments*

The physician assistant and supervising physician members of the committee shall be appointed by the governor. The board of medical examiners shall designate one member to serve on the board. All appointments shall be made within 60 days of the effective date of this Act. All appointments shall be for four year terms, at staggered intervals. Members shall serve no more than two consecutive terms. Reappointments of the physician assistant and supervising physician members of the committee shall be made by the governor.

MEETINGS

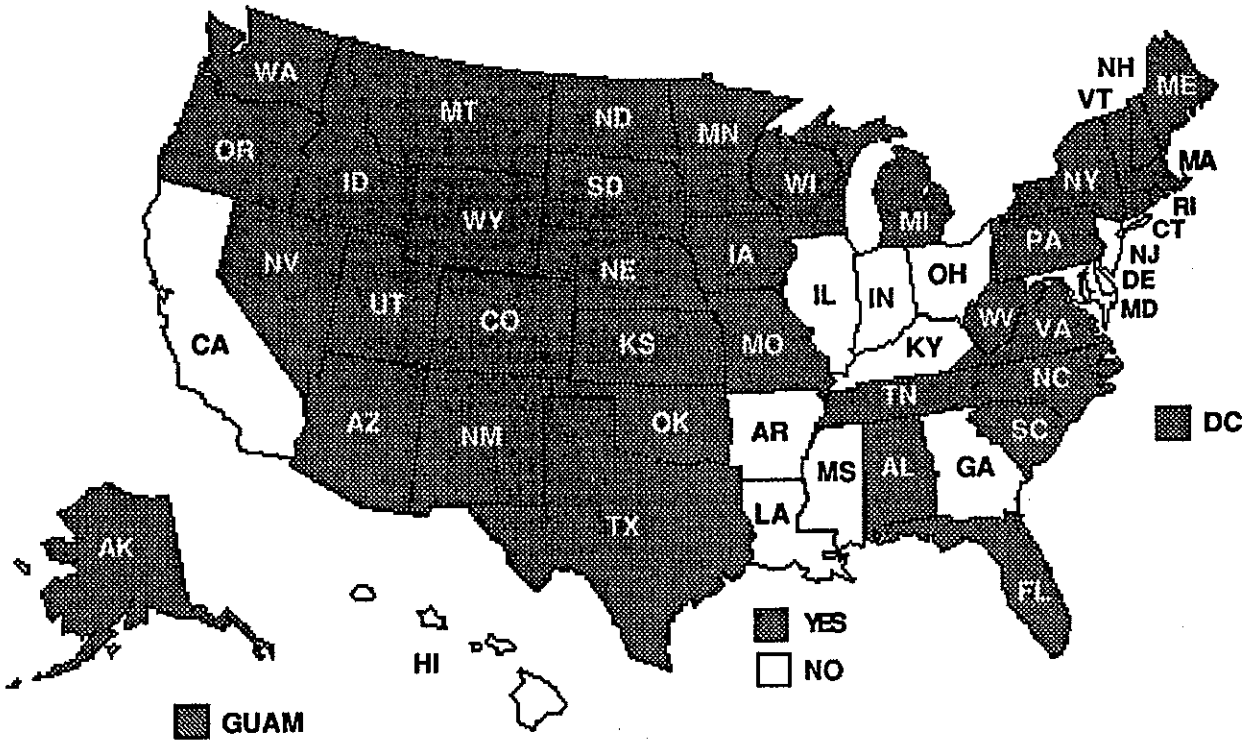
The committee shall meet on a regular basis. A committee meeting may be called upon reasonable notice at the discretion of the chairperson and shall be called at any time upon reasonable notice by petition of three committee members to the chairperson.

IV. Adding a PA to the medical board

To assist in the administration of this Act, the governor shall appoint a licensed physician assistant to the board of medical examiners for a term of ___ years, [etc., etc. in accordance with existing law.] The physician assistant member will have full voting privileges.

Appendix F

Prescriptive Authority for Physician Assistants as of April 8, 1994



Source: American Academy of Physician Assistants (AAPA)

Appendix G

Econometric Model Projections of PA WorKforce Demand and Future Requirements: Data Sources and Assumptions

Health System Growth Rates

Overall demand	baseline:	Based on figure of 23,350 PAs in active practice in 1993; about 28% of all practicing PAs are in hospital settings representing roughly 6550 PAs
	reform:	Derived from above figures
Hospital demand	baseline:	A pseudo-weighted average of two growth rates, the first calculated using American Hospital Association (AHA) data, compiled by the Bureau of Health Professions for all PAs employed in hospitals, 1991-1993 (8.2%); the second was drawn from AAPA Census Data using 1991-1993 (9.5%); a growth rate of 8.5% was used in calculations reform: as derived above
Admissions	baseline:	computed from AHA data, published in Annual Statistics, using 1988-1991
	reform:	assumed to be zero, to reflect the temporary surge in demand from insuring the currently uninsured and underinsured
Outpatient visits	baseline:	compute from American Hospital Association
		(AHA) Annual Statistics, years 1988-1991
	reform:	assumed equal to baseline, reflective of the myriad conflicting influences on this variable under comprehensive health care reform
Office visits	baseline:	computed from NCHS data, published in the 1991 Health United States, total physician contacts, average annual compounded rate over 1985-1989
	reform:	assumed a 1% increase, to 3.2% per year, based on assumptions that the 24 million who are uninsured all year will have 2.5 more visits per year per person, and that the 12 million who are uninsured part-year will have 1.25 more visits per year per person PA Salary baseline: computed from AAPA Census Data, the average annual compound rate between 1990 and 1993, using mean salary
	reform:	assumed a 5 percentage point increase, due to likely intensified short-term pressure to hire PAs in emerging and expanding managed care networks

MD Salary	baseline:	computed from AMA data published in Socioeconomic Characteristics of Medicial Practice, mean net income before taxes, average annual compound rate between 1988 and 1991 for FPs
	reform:	assumed equal to baseline, reflective of the myriad conflicting influences on this variable under comprehensive health care reform
NP Salary	baseline:	computed on an annual compound rate between 1988 and 1992, both average salary figures based on data from the Division of Nursing, BHPr
	reform:	assumed a 5 percentage point increase, due to likely intensified short term pressure to hire NPs in emerging and expanding managed care networks
Residency Slots	baseline:	zero
	reform:	used PPRC's estimated decline of 11,000 positions in GME. Over 5 years, this would translate into a 2.8% per year decline, rounded to 2.5%. Assumes that about 7700 of these slots would create new positions for PAs and NPs, to be filled in roughly equal proportions; yields a 1.25% net increase in residency-related hospital demand for PAs
Primary Care	baseline:	as published in JAMA; September, 1993 MDs
	reform:	assumed a 1.1 percentage point increase up to 1.5% a large per annum growth rate by historical standards for specific physician types

Model developed by Len Nichols, Ph.D.

U.S. Department of Health & Human Services
Public Health Service
Health Resources & Services Administration
Bureau of Health Professions