The Roles of Healthcare Professionals in Implementing Clinical Prevention and Population Health

Article *in* American journal of preventive medicine · February 2011

DOI: 10.1016/j.amepre.2010.10.023 · Source: PubMed

12 authors, including:

Janet Davidson Allan
University of Maryland, Baltimore
94 PUBLICATIONS **4,744** CITATIONS
SEE PROFILE

Reamer L Bushardt
George Washington University
84 PUBLICATIONS **553** CITATIONS
SEE PROFILE

David R Garr
Medical University of South Carolina
66 PUBLICATIONS **1,273** CITATIONS
SEE PROFILE

William Lang
American Association of Colleges of Pharmacy
15 PUBLICATIONS **80** CITATIONS
SEE PROFILE

The Roles of Healthcare Professionals in Implementing Clinical Prevention and Population Health

Tatiana Zenzano, MD, MPH, Janet D. Allan, PhD, RN, FAAN, Mary Beth Bigley, DrPH, MSN, ANP, Reamer L. Bushardt, PharmD, PA-C, David R. Garr, MD, Ken Johnson, PhD, FACHE, William Lang, MPH, Rika Maeshiro, MD, MPH, Susan M. Meyer, PhD, Stephen C. Shannon, DO, MPH, Vladimir W. Spolsky, DMD, MPH, Joan M. Stanley, PhD, CRNP, FAAN

Abstract: Across the health disciplines, clinical prevention and population health activities increasingly are recognized as integral to the practice of their professions. Most of the major clinical health professions organizations have begun incorporating clinical prevention and population health activities and services into educational curricula, the accreditation process, and training to affect clinical practice. Students in each health profession need to understand the roles played by those in other health professions. This understanding is a prerequisite for better communication and collaboration among the professions and for accomplishing the educational objectives included in Healthy People 2020 and organized using the Education for Health framework. To help accomplish these goals, this article summarizes each health profession's contributions to the field of prevention and population health, explains how the profession contributes to interprofessional education or practice, reviews specific challenges faced in the provision of these types of services, and highlights future opportunities to expand the provision of these services.

Several general themes emerge from a review of the different health professions' contributions to this area. First, having well-trained prevention and population health professionals outside of the traditional public health field is important because prevention and population health activities occur in almost all healthcare settings. Second, because health professionals work in interprofessional teams in the clinical setting, training and educating all health professionals within interprofessional models would be prudent. Third, in order to expand services, reimbursement for health promotion counseling, preventive medicine, and disease management assistance needs to be appropriate for each of the professions.

(Am J Prev Med 2011;40(2):261–267) Published by Elsevier Inc. on behalf of American Journal of Preventive Medicine

Introduction

Across the health disciplines, clinical prevention and population health activities increasingly are recognized as integral to the practice of their professions. Most of the major clinical health professions organizations have begun incorporating clinical prevention and population health activities and services into educational curricula, the accreditation process, and training to affect clinical practice. The 2010 Patient Protection and Affordable Care Act recognizes and reinforces the importance of reform to address the prevention of chronic disease and improve the health of populations. The Act establishes a National Prevention, Health Promotion, and Public Health Council.[1] The Council, led by the Surgeon General and made up of multiple federal agencies, is tasked with developing a prevention and health promotion national strategic plan.[1] The Act also has specific provisions that provide for increased access

From the Office of Disease Prevention and Health Promotion, USDHHS (Zenzano), Rockville; the University of Maryland School of Nursing (Allan), Baltimore; the American Association of Colleges of Osteopathic Medicine (Shannon), Chevy Chase, Maryland; the Department of Nursing Education, The George Washington University (Bigley); the Association of American Medical Colleges (Maeshiro); the American Association of Colleges of Nursing (Stanley), Washington DC; the Department of Physician Assistant Studies, Wake Forest University School of Medicine (Bushardt), Winston-Salem, North Carolina; the Department of Family Medicine, Medical University of South Carolina (Garr), Charleston, South Carolina; Dumke College of Health Professions, Weber State University (Johnson), Ogden, Utah; American Association of Colleges of Pharmacy (Lang), Alexandria, Virginia; the Department of Pharmacy and Therapeutics, University of Pittsburgh School of Pharmacy (Meyer), Pittsburgh, Pennsylvania; and the Department of Dentistry, University of California Los Angeles School of Dentistry (Spolsky), Los Angeles, California

Address correspondence to: Tatiana Zenzano, MD, MPH, USDHHS, Office of Disease Prevention and Health Promotion, 1101 Wootton Parkway, LL100, Rockville MD 20852. E-mail: Tatiana.Zenzano@hhs.gov.

0749-3797/$17.00
doi: 10.1016/j.amepre.2010.10.023

to clinical preventive services, bolsters the role of communities in promoting prevention, and expands the number of primary care practitioners who can promote clinical prevention and population health.[1]

Students in each health profession need to understand the roles played by those in other health professions. This understanding is a prerequisite for better communication and collaboration among the professions and for accomplishing the educational objectives included in Healthy People 2020. The Education for Health framework is designed to link the phases of the educational continuum and to connect the contributions of the health professions. Thus, an understanding of the roles played by each of the health professions is key to developing interprofessional collaboration and a coordinated clinical prevention delivery system.

When patients access health care through a variety of provider encounters, they should receive consistent wellness and prevention messages from their health professionals. This article will summarize each health profession's contribution to the field of prevention and population health, explain how the profession contributes to interprofessional education or practice, review specific challenges faced in the provision of these types of services, and highlight future opportunities to expand the provision of these services.

Allied Health

Allied health professionals are involved in a range of health services that provide clinical and population care. The Association of Schools of Allied Health Professions (ASAHP) has many programs within its member institutions, some of which include athletic training, dietetics, occupational therapy, physical therapy, and respiratory therapy. There are almost 200 recognized allied health professions. Two professions referred to at times as allied health professions, nursing and physician assistants, provide a substantial and diverse array of primary care and preventive services and will be highlighted further in later sections of this article.

Education/Training

Allied health students are trained to acquire procedural skills and to evaluate, diagnose, and potentially treat health conditions. Educational curricula include instruction in research, outcome measurements, and quality of care issues. These are all central concepts in population health. Prevention and health promotion communication techniques also are taught to practitioners for use during individual client counseling sessions.

Clinical Prevention and Population Health Services

Allied health professionals often engage, either independently or as part of a healthcare team, in the ongoing evaluation and assessment of patients' health needs. Although a small portion of allied health professionals work solely in the public health field, most work as part of a clinical healthcare team. Regardless of the particular position they hold, these individuals must work interprofessionally within the healthcare system. For example, diabetes education programs for patients largely rely on the efforts of nurses and dieticians who work collaboratively with patients and other clinicians to achieve healthy outcomes.

Challenges/Future Opportunities

The majority of ASAHP education programs include clinical prevention and population health curricula in their courses. However, the focus of most of these programs remains on clinical care. The ASAHP completed a study to assess whether its represented allied health colleges were using the Clinical Prevention and Population Health Curriculum Framework in required curricula.[2] Although study respondents reported that their courses taught prevention and health promotion concepts, preventive medicine was a required subject in only the following programs: athletic training (60%); dental sciences (64%); nursing (78%); physician assistants (100%); and respiratory therapy (75%).[2] The Curriculum Framework should be strongly promoted to increase the inclusion of health promotion and disease prevention training in allied health schools.

Dentistry

Dentistry, as defined by the American Dental Association House of Delegates, is

The evaluation, diagnosis, prevention and/or treatment (nonsurgical, surgical or related procedures) of diseases, disorders and/or conditions of the oral cavity, maxillofacial area and/or the adjacent and associated structures and their impact on the human body; provided by a dentist within the scope of his/her education, training and experience, and in accordance with the ethics of the profession and applicable law.[3]

Education/Training

The Competencies for the New General Dentist, adopted by the American Dental Education Association House of Delegates, highlights the important role of health promotion within the field of dentistry. It states that general dentists must be competent to provide prevention, intervention, and educational strategies; participate with den-

tal and other healthcare professionals in patient management and health promotion; and contribute to the improvement of oral health beyond those served in traditional practice settings.[4]

Clinical Prevention and Population Health Services

The major clinical preventive services provided by dental professionals currently focus on risk assessment for diseases of the periodontium, the management of dental caries by risk assessment, and the early detection of oral cancer. Although the majority of these services are individual clinical services, they provide the opportunity for health education and promotion that extends into community-based services. Dentists are well positioned to provide professional advice and take public policy advocacy roles, such as those taken during water fluoridation efforts to improve population oral health. In an effort to improve health promotion and population health, dental professionals collaborate with other healthcare providers in professional training programs. For example, dental professionals provide education for students in medical, nursing, and physician assistant training programs.

Challenges/Future Opportunities

Increasing the clinical interactions among dental and other health professionals could improve health outcomes. For example, the prevention, recognition, and treatment of conditions such as poor oral hygiene in the elderly population could be improved with greater collaboration. Methods to increase interactions among healthcare professionals in the clinical setting are needed. In addition, while the provision of oral health education and prevention instruction is an important task of dental professionals, reimbursement for counseling time is insufficient.

During the next several decades, an increased demand for access to dental care is likely. Licensing changes are needed to permit the independent practice of dental hygienists and midlevel practitioners in school-based dental programs, preschool child care centers, nursing homes, and residential settings, such as detention centers and homeless facilities.

Nursing

Nursing is the largest healthcare occupation, with an estimated 3.0 million registered nurses (RNs) in the U.S. according to the 2008 National Sample Survey of Registered Nurses.[5] The specific duties of individual nurses are dependent on the role, practice setting, population served, and specialty area of the healthcare practice in which they are employed. All nurses are prepared to assess a patient's health, provide clinical treatment, and educate patients and families.

Education/Training

Clinical prevention and population health are essential curricular components in the nationally recognized curriculum guidelines for baccalaureate, master's, and doctor of nursing practice programs. The curricular standards are required by the national nursing accrediting body for baccalaureate and graduate nursing programs, the Commission of Collegiate Nursing Education.[6] All baccalaureate-prepared nurses have required coursework and clinical experiences in community and public health. In addition, some nurses choose to specialize at the graduate level in public health.

Clinical Prevention and Population Health Services

Clinical prevention and population health is a primary component of most nursing practice. Nursing services include health risk assessments; implementation of risk reduction strategies for individuals and communities; health education and counseling for patients, families, and groups; chronic disease management; and assisting patients and families to interpret and assess health information and the use of technologies.

Nurses who are educated at the graduate degree level provide a substantial portion of the country's primary care and chronic disease management services. They accomplish this in a variety of settings, including community or public health clinics, private or group practice offices, specialty clinics, long-term care and rehabilitation facilities, and acute care facilities. Nurses who have graduate-level public health training provide leadership in planning and implementing public health programs and initiatives at the local, state, and national levels.

Regardless of their field of practice, nurses are critical members of interprofessional teams and have a considerable impact on health outcomes when their scope of practice is maximized. A review of magnet hospitals found that nurse involvement in decision-making processes correlated with improved patient outcomes.[7]

Challenges/Future Opportunities

One of the greatest areas of nursing contribution is in primary care practice and chronic disease management. Reimbursement for services in those areas is deficient, however, and needs improvement. Advanced Practice Registered Nurses (APRNs), particularly nurse practitioners (NPs) and certified nurse-midwives (CNMs), could make a greater contribution to meeting the country's primary care needs. However, many state regulations limit the scope of practice of APRNs (e.g., limited pre-

scriptive authority, required physician oversight, and no direct billing for services). Licensing and regulatory changes are needed to allow APRNs to practice more independently and to their full scope of preparation.

Pharmacy

Pharmacists are the medication-use experts in the healthcare system. They provide medication therapy management, coordinate systems of medication distribution and dispensing, interface with patients and prescribers, and engage in the provision of clinical and community-based preventive services.

Education/Training

The Accreditation Council for Pharmacy Education is the accrediting agency for professional degree programs leading to the Doctor of Pharmacy. In 2007, the accreditation standards were revised to require that pharmacy graduates be competent to "promote health improvement, wellness, and disease prevention in cooperation with patients, communities, at-risk populations, and other members of an interprofessional team of healthcare providers."[8] The education of the pharmacist includes behavior change strategies, such as motivational interviewing, to raise patient awareness and education and to modify behaviors that have an impact on health. In 2009, 97.1% of graduating students from 83 colleges and schools of pharmacy agreed or strongly agreed that the PharmD program at their respective institutions prepared them to promote wellness and disease prevention services.[9]

Clinical Prevention and Population Health Services

The provision of patient care services for the optimal use of medications at the individual and population levels, the efficient and effective management of the medication distribution and use systems, and the promotion of health and disease prevention form the foundation of the role of pharmacists in practice.

Pharmacists, as readily accessible community providers, are well positioned to deliver prevention messages that are consistent with those of other members of an interprofessional healthcare team. Pharmacists frequently provide clinical prevention and population health services that include immunizations, smoking-cessation programs, nutrition guidance, family planning education, epidemiologic surveillance, improvement of health literacy, and antibiotic management.

Pharmacists are recognized as integral to the improvement of patient health outcomes, especially for those patients with chronic illnesses who benefit from medication therapy and team-based approaches to care. For example, pharmacists can help patients with diabetes manage complex drug regimens and meet goals for glycemic control.[10] These community pharmacy diabetes management programs have been shown to reduce healthcare costs and improve patient satisfaction.[11,12]

Challenges/Future Opportunities

The Health Resources and Services Administration recognizes the importance of the integration of the pharmacist in sites that serve indigent or underserved populations and supports this integration through the Patient Safety and Clinical Pharmacy Collaborative.[13] Although private insurer coverage is increasing, academic pharmacy still subsidizes the provision of these services to a great extent, and greater financial compensation is needed. In addition, expanding opportunities to compensate pharmacists for involvement in disease management would be beneficial.

Academic and professional pharmacy organizations are committed to increasing patient access to clinical prevention and population health services.[14,15] Access to pharmacist-provided clinical prevention and population health services is available. Spurred by the inclusion of medication therapy management for targeted individuals in Medicare Part D, an increasing number of third-party payers, including some state Medicaid programs and self-insured employers, are adding access to pharmacist-provided care as a covered benefit. Patients will have increased access to medication therapy management services across the healthcare continuum as provisions of the Patient Protection and Affordable Care Act intended on improving care coordination and quality are implemented.

Physicians

Physicians are Doctors of Medicine (MDs) or Doctors of Osteopathic Medicine (DOs). They are licensed to prescribe medications and can provide medical treatment and services in any medical specialty, ranging from psychiatry to surgery. Osteopathic medical colleges provide extra training on the topics of holistic care, the musculoskeletal system, and osteopathic manipulative treatment. Physicians work in a variety of settings, which include hospitals; outpatient clinics; academic institutions; health departments; governmental agencies; and nongovernmental organizations, such as advocacy groups, pharmaceutical companies, and insurance companies.

Education/Training

Physician training incorporates concepts related to prevention and population health in medical school and residency training. The Liaison Committee on Medical

Education, the accrediting authority for MD-granting schools, and the American Osteopathic Association Commission on Osteopathic College Accreditation, which accredits colleges of osteopathic medicine, both include preventive medicine and public health in their curriculum standards.[16,17] Residency training also integrates public health principles and skills.[18] Some physicians choose to specialize in prevention and public health and become Preventive Medicine physicians. Preventive Medicine residency programs train physicians on the following core competencies: biostatistics; epidemiology; environmental and occupational health; planning, administration, and evaluation of health services; and the practice of prevention in clinical medicine, health policy, and management.[19]

Clinical Prevention and Population Health Services

Physicians practice clinical prevention and population health in a variety of roles and settings. Primary care physicians focus on disease prevention and health promotion, providing preventive screening services and health counseling to their patients. In addition, as stated in a 2007 IOM report, *Training Physicians for Public Health Careers*, most physicians also participate in public health activities, although they would not identify themselves as public health physicians.[20] For example, a physician who helps identify and treat an outbreak of influenza in a community health clinic is practicing public health. Historically, physicians were leaders in public health. Although the public health workforce is more diverse now, physicians who work in public health still often assume such leadership roles as director of a chronic disease prevention and health promotion program at a local health department, director of a state health department, or as a senior public health administrator at a governmental agency or nongovernmental organization.

Physicians work on teams with other healthcare professionals in various types of practice settings. As stated earlier, physicians are often in leadership positions within the team and rely on all team members to function cohesively to provide care.

Challenges/Future Opportunities

Similar to the other health professions, reimbursement for clinical time spent on preventive health counseling and screening needs improvement. Another potential area of development is to increase opportunities for interprofessional training. As stated in the 2003 IOM report *A Bridge to Quality*, "Health professionals are asked to work in interdisciplinary teams, often to support those with chronic conditions, yet they are not educated together or trained in team-based skills."[21] Increasing interprofessional education and training in medical school, residency, and in practice settings is advisable.

Many medical students still report that they lack appropriate training in public health and population health topics.[22] Maximizing efforts to address this deficiency is also recommended. Patients and communities may benefit if physicians had a better understanding of the public health system and the opportunities to contribute to improving population health. Expert panels have recommended that prevention and public health content in medical education should be improved, and have identified the content areas they felt would be most relevant to physicians.[23,24] In addition, an expansion of the number of DO–MPH and MD–MPH programs and increased funding for Preventive Medicine residency programs would increase the opportunities for physicians to engage in population health training and subsequent practice.

Physician Assistants

Physician assistants (PAs) are licensed healthcare professionals who practice medicine with physician supervision. PAs perform physical examinations, diagnose and treat illnesses, order and interpret diagnostic tests, provide preventive health counseling and services, assist in surgery, and prescribe medications and medical devices. PAs, practicing within a physician–PA team model, exercise autonomy in medical decision making and offer a wide array of diagnostic and therapeutic services. Physician supervisors delegate responsibility to the PAs with whom they work through scope of practice guidelines, which may grow as the physician assistants acquire new skills while in clinical practice.

Education/Training

Physician assistants are unique in that most are trained in primary care. The generalist model, often used to train PAs, can be complemented also by training in surgical and subspecialty care. Most training programs equip their graduates to follow national guidelines and best practices for health promotion and disease prevention, such as those recommended by the U.S. Preventive Services Task Force and CDC. Many PAs also receive training in motivational interviewing and behavioral modification techniques, which are used to support patient adherence to healthy lifestyles.

Clinical Prevention and Population Health Services

Physician assistants possess the capability to deliver a wide range of disease prevention and health promotion services similar to other primary care providers. These

services include patient education and counseling about healthy lifestyles and avoidance of behaviors that are known to negatively affect a patient's health or quality of life.

A 2008 census report from the American Academy of Physician Assistants revealed that more than 43% of PAs worked in group practices or solo physician offices, and more than one third were working in hospitals.[25] The remaining PAs were located in rural clinics, community health centers, freestanding surgical facilities, nursing homes, school- or college-based facilities, industrial settings, and correctional systems.[25]

PAs always are involved in team-based models of patient care because of their relationship with physician supervisors. It has been found to be cost effective for PAs to carry out duties that physicians can perform, such as preventive healthcare counseling.[26,27] PAs may have more time available to spend with patients when compared with their physician supervisors.

Challenges/Future Opportunities

It is clear that the need for highly qualified primary care providers is insufficient to meet current demands, and future needs will likely escalate. PAs are well qualified and highly trained to support continuity and access to care in a proven, cost-effective model. PAs will likely be key players in meeting primary care needs. A potential role for PAs, which could be fostered by enhancements to training and practice policy, would be in the design, implementation, and direction of the delivery of care in clinics and facilities all across the country utilizing a patient-centered medical home model.

Conclusion

Each health profession has a unique contribution to make to the practice of clinical prevention and population health. Several general themes emerge from a review of the different health professions' contributions to this area. First, having well-trained prevention and population health professionals outside of the traditional public health field is important because prevention and population health activities occur in almost all healthcare settings. Clinicians need a better appreciation of public health to support the population health efforts provided by public health practitioners and to promote collaborative opportunities with the public health community to help improve their patients' and communities' health. Therefore, increasing the inclusion and breadth of preventive medicine principles and population health in all educational curricula would benefit the health professions as well as the individuals and populations they serve.

Second, because health professionals work in interprofessional teams in the clinical setting, training and educating all health professionals within interprofessional models would be prudent. Third, in order to expand services, reimbursement for health promotion counseling, preventive medicine, and disease management assistance needs to be appropriate for each of the professions. The increased attention to and support for clinical preventive services found in the Health Care and Education Reconciliation Act of 2010 should help accelerate the expansion of clinical prevention and population health services throughout the healthcare delivery system.

The work described in this theme paper was funded in part by a grant from the Josiah Macy Jr. Foundation.

No financial disclosures were reported by the authors of this paper.

References

1. Public Law 111–148: The Patient Protection and Affordable Care Act of 2010.
2. Johnson K. Meeting Healthy People 2010 Objective 1.7 in ASAHP programs. J Allied Health 2010;39(3):150–5.
3. American Dental Association. Dentistry—the model profession. www.ada.org/sections/about/pdfs/statements_dentistry.pdf.
4. American Dental Education Association. Competencies for the new general dentist. www.adea.org/about_adea/governance/Pages/CompetencesfortheNewGeneralDentist.aspx.
5. USDHHS Health Resources and Services Administration. The registered nurse population: initial findings from the 2008 National Sample Survey of Registered Nurses. www.bhpr.hrsa.gov/healthworkforce/rnsurvey/initialfindings2008.pdf.
6. Commission on Collegiate Nursing Education. Procedures for accreditation of baccalaureate and graduate degree nursing programs. www.aacn.nche.edu/accreditation/pdf/Procedures.pdf.
7. Scott JG, Sochalski J, Aiken L. Review of Magnet hospital research: findings and implications for professional nursing practice. J Nurs Adm 1999;29(1):9–19.
8. Accreditation Council for Pharmacy Education. Accreditation standards and guidelines for the professional program in pharmacy leading to the doctor of pharmacy degree. www.acpe-accredit.org/pdf/ACPE_Revised_PharmD_Standards_Adopted_Jan152006.DOC.
9. American Association of Colleges of Pharmacy. Graduating Pharmacy Student Survey summary report—2009. www.aacp.org/resources/research/institutionalresearch/Documents/2009_GSS_Summary%20Report_all%20schools_83.pdf.
10. Coast-Senior E, Kroner B, Kelly C, Trilli L. Management of patients with type 2 diabetes by pharmacists in primary care clinics. Ann Pharmacother 1998;32:636–41.
11. Garrett DG, Martin LA. The Asheville Project: participants' perceptions of factors contributing to the success of a patient self-management diabetes program. J Am Pharm Assoc 2003;43:185–90.
12. Cranor CW, Christensen DB. The Asheville Project: factors associated with outcomes of a community pharmacy diabetes care program. J Am Pharm Assoc 2003;43:160–72.
13. HRSA. Patient safety collaborative overview. www.hrsa.gov/patient/safety/Docs/overview.pdf.
14. Joint Commission on Pharmacy Practitioners. An action plan for implementation of the JCPP future vision of pharmacy practice. www.ascp.com/advocacy/coalitions/upload/JCPP-ExecSummary.pdf.

15. American Public Health Association. The role of the pharmacist in public health. www.apha.org/advocacy/policy/policysearch/default.htm?id=1338.
16. Liaison Committee on Medical Education. Standards for accreditation of medical education programs leading to the M.D. degree. www.lcme.org/functions2010jun.pdf.
17. Commission on Osteopathic College Accreditation. Accreditation of colleges of osteopathic medicine: COM accreditation standards and procedures. www.osteopathic.org/pdf/SB03-Standards%20of%20Accreditation%20July%202009.pdf.
18. Accreditation Council for Graduate Medical Education. Common program requirements: general competencies. www.acgme.org/outcome/comp/GeneralCompetenciesStandards21307.pdf.
19. American College of Preventive Medicine. Core competencies and performance indicators for preventive medicine residents. www.acpm.org/education/residency/core_comp.pdf.
20. National Academies Press. Training physicians for public health careers. books.nap.edu/openbook.php?record_id=11915&page=29.
21. National Academies Press. Health professions education: a bridge to quality. books.nap.edu/openbook.php?record_id=10681&page=2.
22. Association of American Medical Colleges. GQ program evaluation survey: all schools summary report. www.aamc.org/data/gq/allschoolsreports/2008_pe.pdf.
23. National Academies Press. Training physicians for public health careers. books.nap.edu/openbook.php?record_id=11915&page=29.
24. Maeshiro R, Johnson I, Koo D, et al. Medical education for a healthier population: reflections on the Flexner Report from a public health perspective. Acad Med 2010;85(2):211–9.
25. American Academy of Physician Assistants. 2008 AAPA physician assistant census report. www.aapa.org/images/stories/2008aapacensusnationalreport.pdf.
26. Grzybicki DM, Sullivan PJ, Oppy JM, Bethke AM, Raab SS. The economic benefit for family/general medicine practices employing physician assistants. Am J Manag Care 2002;8(7):613–20.
27. Hooker RS. The economic basis of physician assistant practice. Physician Assist 2000;24(4):51–4.