PHYSICIAN ASSISTANT MEDICAL PRACTICE IN THE HEALTH CARE WORKFORCE: A RETROSPECTIVE STUDY OF MEDICAL MALPRACTICE AND SAFETY COMPARING PHYSICIAN ASSISTANTS TO PHYSICIANS AND ADVANCED PRACTICE NURSES

By

Jeffrey G. Nicholson

A dissertation submitted in partial fulfillment of

the requirements for the degree of

Doctor of Philosophy

(Educational Leadership and Policy Analysis)

at the

UNIVERSITY OF WISCONSIN-MADISON

2008

ACKNOWLEDGEMENTS

There are many individuals who have been significant influences in both my life and career as a physician assistant and educator. I would like to thank Dr. Gene Jones for giving me a start in PA education and for first believing in my teaching and research potential when I was his student. I would like to thank Dr. Rod Hooker for sharing his incredible research acumen with me and for his kind words of encouragement at critical junctures in the completion of this dissertation. I am honored to work with and learn from someone who is recognized as the foremost researcher in the PA profession. The following individuals have also been inspirations to me in PA education and deserve my public appreciation for their examples of professional leadership, education, research, and dedication to the advancement of the PA profession: Nish Orcutt, Jim Cawley, Tony Miller, Rick Dehn and Dennis Blessing. Thank you for your mentorship and examples over the years. I am honored and grateful to be considered your colleague.

Dr. Jerlando Jackson, thank you for allowing me to combine my educational leadership and medical careers in the choice of this dissertation topic and for your considerable work in guiding me through the dissertation writing process. Dr. Craig Gjerde, thank you for participating on my committee and for your encouragement and mentorship during my tenure at the University of Wisconsin – Madison PA Program. I also thank the American Academy of Physician Assistants and the Physician Assistant Education Association for supporting this dissertation with grant funding. And finally, I thank Dean Susan Skochelak and the University of Wisconsin School of Medicine and Public Health for supporting the completion of this doctoral degree.

ABSTRACT

As the physician assistant (PA) profession has matured, it has become a significant factor in the nation's health care delivery system. Quality of care stakeholders are increasingly concerned about the medical care being delivered by non-physician providers. Stakeholders include local and national government, health care delivery organizations, health care provider education programs, the health insurance industry, and the general public. Each is affected by the liability of physician assistant medical practice. While PAs are being trained and hired at a rate that assumes adequate competence, quality and safety, current research is absent of a comprehensive analysis of PA malpractice over time.

This study examined 17 years of data related to unsafe medical practice (i.e., practice that harms patients or the public). The study analyzed and compared a variety of markers (e.g., civil lawsuits and Medicare program exclusions filed with the National Practitioner Data Bank) of safety between physicians, PAs, and advanced practice nurses (APNs). Results of the study suggested that: a) the overall incidence and ratio of malpractice claims per provider was no greater for PAs and APNs than for physicians over a 17 year period; b) the average and median malpractice payments of PAs were less than that of physicians while that of APNs were greater; c) the trend in median payment increases was less for PAs than physicians and APNs, and higher for APNs than physicians; d) PAs did not negate their cost effectiveness through the costs of malpractice; e) the rate of malpractice incidence increased for PAs and APNs over the study period but remained steady for physicians; and f) the reasons for disciplinary actions against PAs were similar to that of physicians and APNs. Other study findings included gender differences in both malpractice payment incidence and malpractice payment amount and disparities between states regarding the frequency of disciplinary actions as compared to malpractice incidence.

TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

LIST OF TABLES

LIST OF TABLES (CONTINUED)

LIST OF TABLES (CONTINUED)

LIST OF FIGURES

LIST OF FIGURES (CONTINUED)

CHAPTER I

INTRODUCTION

This study investigated the growing field of physician assistant (PA) medical practice. With a relatively short professional history, PAs represent a fast-growing segment of the U.S. health care continuum (AAPA, 2007). From its military beginning in the 1960s, to its full-fledged, recognized status as a medical profession, PA practice represents an expanding form of primary medical care in this country. PA practice is not immune to the concerns of health care quality, access, and cost. PA practice has brought health care access to thousands of Americans in health care professional shortage areas (HPSAs) by providing medical services at hospitals and primary care clinics in these areas (Shafrin, 2006a). However, with the expansion of PA practice also came the unpleasant issues of liability and lawsuits, thus raising the question: are PAs safe providers of care?

To answer this fundamental question, the study analyzed growing trends in PA practice, investigated the medical practice liability of PAs, and compared and contrasted those findings against similar markers (e.g., lawsuits and licensure actions) for the two provider groups with whom PAs are commonly compared: physicians and advanced practice nurses (APNs). The reader is cautioned to bear in mind that the liability and malpractice risk of these three provider groups are different because each group provides care that varies in complexity and risk of undesired outcome. This study did not intend to assess or quantify the inherent differences in malpractice risk between these three provider groups, it simply reported and compared outcome markers of unsafe medical practice. Physician and APN data was presented for comparison because these providers are the most similar to physician assistants in medical practice scope and training, and also because the comparison provides a context for quantifying safety.

This study also presented the implications of its findings for educational leaders, health care policymakers, and researchers. It reviewed the extent of both pre and in-service education currently provided in clinical practice safety, risk management and medical malpractice, and made recommendations for educational leaders and education policymakers based upon its findings.

Statement of the Problem

The American health care system is under constant scrutiny from the public, health care providers, the government, and multiple regulators (Hooker & Cawley, 1997). Enacted as a means for increasing healthcare delivery, after 40 years of deployment PAs are entwined into the complexity of this system. Even with multiple levels of oversight and ongoing research efforts, a number of authorities and the media continue to point out the shortcomings of America's health care system (Sultz & Young, 2006; Pozgar, 2007). Former President Bill Clinton and his wife, Senator Hilary Clinton, attempted to make health care reform a national priority during their political campaigns and terms in office. Chief among the shortcomings cited were the lack of medical practitioners, the spiraling cost of healthcare, and the increasing number of Americans who lack insurance to pay for their health care (Sultz & Young, 2006). Growing out of similar concerns that originated in the 1960s, the PA profession was founded to address these very issues.

Many observers of the health care system, including government regulators, hospital administrators, and consumers, consider these issues to be at crisis proportions (Hooker & Cawley, 1997). Many hospitals, especially in low-income and/or HPSAs of the country, have closed because they were unable to collect reimbursement for their services from an uninsured population, government programs that changed participation requirements, and because they

lacked medical professionals to staff their facilities (Sultz & Young, 2007). Health care policymakers, politicians, service providers and health care consumers are exploring the use of physician extenders such a physician assistants and advanced practice nurses to augment the number of the nation's physicians and provide quality, cost-effective medical care (Hooker & Cawley, 1997). Indeed, over the first 40 years of the PA profession's existence, PAs have expanded into nearly every medical specialty (AAPA, 2007).

As stakeholders turn to the PA profession to help meet the needs of a health care system in crisis, there is a need to analyze data from researchers on the quality, cost-effectiveness, and safety of physician assistant medical practice. A paucity of information is available regarding the PA profession. Thus, this researcher sought to provide baseline data and a foundation for future researchers to compare and contrast PA practice to that of physicians and APNs. Of primary concern is patient safety. Little aggregated data exists that synthesizes liability issues for the PA profession. Thus, this current study is groundbreaking research that will be of value to multiple stakeholders.

Background for the Study

The PA profession has a relatively short history in the U.S. The profession originated in the 1960s as a response to the national need for health care services in the wake of physician shortages and maldistribution of physician services (Carter, 1992). Dr. Eugene Stead, a North Carolina Duke University Medical Center physician, is credited with creating the first class of PAs in 1965 (Physician Assistant History Center, 2007). The first class was comprised of experienced Navy corpsmen that already possessed military medical training and experience serving in a medical capacity during the Vietnam War. Dr. Stead based this first program on the

fast-track training method used for medical doctors during World War II (Physician Assistant History Center, 2007).

This fast track approach was that of a physician extender, whereby individuals would be trained in a relatively short period to provide basic medical care under the general supervision of physicians. From the humble beginning of four ex-Navy corpsman graduates at Duke University's new PA training program in 1967, there are now over 63,000 certified PAs working in clinical practice as of January 2007 (AAPA, 2007).

The nursing profession was initially approached to take on the PA model of medical care in the 1960s. AMA leaders were exploring options for training health care professionals – nurses among them – for advanced clinical role. However, the AMA and American Nursing Association's (ANA) dialogue on the PA was often characterized by sharp language and strong debate over the new profession. Ultimately the ANA rejected the AMA proposal of the PA concept on two occasions (Hooker and Cawley, 2003). Despite this initial rejection, the nursing profession since moved forward with advanced practice nurse training in multiple specialties. Unlike PAs who are trained as generalists and have one national credentialing authority, nurses choose from a number of advanced practice training designations and certifications such as nurse midwifery, nurse anesthetist, clinical nurse specialist, women's health specialist or family nurse practitioner. Much APN practice, including family nurse practitioner, women's health nurse practitioner and geriatric nurse practitioner is identical in scope to PA generalist practice. For this reason, and because the two provider types have similar histories and timelines, PA and APN practice is often compared in the research literature. The current study continues this tradition.

For a number of reasons, physicians are critical stakeholders with regard to physician assistant hiring and utilization (Hooker, 1997). Physicians are legally bound to a supervisory relationship with their physician assistants and as such are liable for the medical decisions and actions of their PAs. The quality of their daily interactions and relationship has an impact on the success of their partnership. Some factors impacted by that relationship include the quality and quantity of care provided to patients, efficiency in the provision of care, enjoyment of their chosen professions, and the quality of life of both physician and PA (Manion, 2005). The quality of life effects are especially noteworthy as many physicians hire PAs for the purpose of reducing their workloads (Manion, 2005).

Physicians are also stakeholders with regard to the utilization of PAs because physician assistants have proven their ability to provide similar care to that of physicians at a much reduced cost (Roblin, 2004). Physicians therefore have a motivated interest in monitoring the number of physician assistant graduates and their scope of practice. The perception of the physician assistant profession by physicians may therefore play a significant role in determining the number of physician assistants hired and utilized. Physician assistant utilization in turn has an impact on the availability of health care services, especially in medically underserved areas, and among the medically uninsured or underinsured (Larson, 2003).

However, physicians are not the only stakeholders with regard to physician assistant utilization, nor are they the only employers. Other stakeholders that are impacted by PA utilization include organizations that provide health care services: hospitals, clinics, health maintenance organizations, insurance companies, the federal government, and the health care consumer (Larson, 2003). If the physician assistant profession is perceived as an instrument that can provide high quality, cost-effective and safe medical care, all of these entities will be

impacted by PA utilization. An examination of the historical trend in hiring practices indicates that many of these stakeholders are demonstrating increased interest in PA utilization. The number of PAs employed in the U.S. increased from 40,000 in 1992 to over 50,000 in 2005, and is projected to be 80,000 by 2010 (AAPA, 2006).

Rationale and Significance of the Study

Existing studies (e.g., Hooker, 1997; Shafrin, 2006a, 2006b) on the physician assistant profession focus on a number of issues important to the health care system. These include PA cost effectiveness, patient satisfaction, PA specialization, provision of care in medically underserved areas, and PA job satisfaction. But no recent published studies exist that examine the malpractice of physician assistants. This study was intended to fill the void, as it examined the scope of malpractice that exists in the PA profession and compared it to that of physicians and other health care professionals.

The PA profession is the third fastest-growing health care discipline in the United States according to the U.S. Bureau of Labor Statistics (Medical News Today, 2004). Projections call for the PA profession to grow by 49 percent by 2012. According to AAPA estimates, approximately 192 million patient visits were made to PAs in 2003, up from 183 million patient visits in 2002. Of the other health care professions making the top ten for fastest-growing occupations, the PA profession requires more postsecondary education to enter the field and is the only health care profession classified in the top quartile ranking by the Occupational Employment Statistics in annual earnings (Medical News Today, 2004).

The utilization of PAs in the health care workforce has made social, political, and economic impacts on health care consumers, providers, and delivery systems. Health care policymakers need to determine whether the expansion of the PA profession and increased

utilization of physician assistants across medical specialties is good for the nation's citizens and health care systems. While the federal government has historically supported the expansion of the PA profession through Title VII training grants to PA educational programs in meeting the health care needs of Americans who are medically underserved (Shafrin, 2006a), a central question that still needs examination is whether PAs are safe medical practitioners? Further, are PAs at least as safe as their physician colleagues and mentors?

Attorneys, insurance companies, state and federal governments, health care policymakers and health care consumers are all stakeholders in the safety of care provided by physician assistants. Published data on the safety of physician assistant medical practice are nearly non-existent. To date, only two studies (i.e., Brock, 1998; Cawley, Rohrs, & Hooker, 1998), have investigated the safety of PAs by comparing data sets found in the National Practitioner Data Bank (NPDB). Brock's work, based on data collected from 1991 to 1996, found that physician claims reported to the NPDB were 420 times that of PA claims (100,750 for physicians and 240 for PAs). He noted that since the NPDB began collecting data, total physician payments were 946.6 times the total for PAs. Cawley's group, examining six years of data from the NPDB, found that the average malpractice payment of PAs was $55,241 while that of physicians was $139,581.

Purpose of the Study and Research Questions

The purpose of this study was to research PA liability and malpractice issues to determine if PAs are a safe choice for health care provision. This study reviewed the literature on PA practice and litigation trends, investigated national practitioner databases, examined the professional organizations that govern PAs to determine the viability and future of PAs and explored issues related to safety for health care consumers. The intent of this study was to

determine whether the practice of medicine by physician assistants is as safe as the practice of medicine by physicians and advanced practice nurses? Specifically, research questions for this study included: (a) Do PAs negate their cost effectiveness through the costs of malpractice?; (b) Is the rate of malpractice for physician assistants at the same trajectory as that of physicians and advanced practice nurses?; (c) Is the ratio of malpractice claims per provider the same for physician assistants, advanced practice nurses and physicians?; and (d) Are the reasons for disciplinary action against PAs and APNs the same as those for physicians? Based upon an analysis of the data, recommendations were made to health care policymakers and researchers on PA utilization and to educational leaders in the PA profession on the provision of pre and in-service education regarding PA practice safety.

Assumptions and Limitations

There were several assumptions regarding this research study. The researcher assumed that PA practice will continue forward, building on its current success as a significant factor in health care delivery. The research undertaken was believed to provide a solid, more comprehensive and updated foundation for the profession to integrate as it considers patient safety, quality, and medical care efficacy. For the purpose of the study, it was assumed that PAs within the data set are practicing within their legal scope of practice and physician supervisory requirements as defined by state regulations and state medical examining boards. It was also assumed that civil courts generally hold PAs liable for their medical practice decisions and actions independently of their supervising physicians. Additional assumptions included that an analysis of the data can be used to accomplish the following: (a) to predict malpractice and adverse action trends of provider types; (b) to determine the likelihood of malpractice payments and disciplinary actions of providers during their careers; (c) to reveal the effectiveness of states

or jurisdictions in sanctioning providers with malpractice payments and therefore provide one indicator of the effectiveness of states and jurisdictions at protecting patients; and (d) to provide recommendations to PA, physician, and APN training programs and professional organizations on the most appropriate type and amount of education to reduce professional liability and promote patient safety.

Liability and Specialty Differences

This study of PA practice and currently observed liability issues also has limitations. No comparison of malpractice incidence across disciplines is fair without an understanding of the liabilities undertaken by each discipline. While this study demonstrated differences in malpractice incidence, payment amounts, and adverse action incidence between PAs, APNs and physicians, the reader is cautioned and reminded that each of these medical provider groups is comprised of a different compilation of medical practice specialties with a subsequent difference in malpractice risk. The data set utilized did not allow for direct comparisons across the three provider groups by specialty of practice. Only APN midwives and anesthetists were reported separately and only because they are certified separately from other APNs.

Role Differences

Additionally, physician assistants at their founding were designed to be dependent practitioners, working alongside physicians as their assistants rather than as their substitutes. Although PA practice has become more autonomous than its founders may have anticipated in the 1960s, it is generally recognized that PAs are not expected to possess the full medical knowledge base of physicians nor are they expected to manage the most complicated of patients without assistance from a supervising physician. Likewise, licensing and regulatory agencies recognize that APNs do not possess the same degree of training as physicians and therefore

require a collaborating physician for APNs in much the same manner as a supervising physician is required for PAs.

The reader is therefore cautioned to bear in mind is that PAs and APNs may not as a whole take on the same level of malpractice risk as physicians. It is not the intent of this study to determine what that difference in risk is between these provider groups. The study is not intended to determine, define or quantify the differences in liability or malpractice risk between PAs and physicians or PAs and APNs. It is solely intended to analyze available data and report the differences in actual malpractice incidence, payments and other known outcome markers of safety over a 17 year period.

Autonomy Differences

In order to assess the inherent differences in malpractice risk and liability between physicians, PAs and APNs, one would need to both quantify the differences in autonomy between PAs, APNs and physicians and to account, compare and proportion the variety of medical specialties of each provider group, each having its own inherent risk. These tasks are complex and well beyond the scope of this study. The question of autonomy differences alone is difficult to quantify because the level of autonomy of a PA or APN is determined by multiple factors and may vary greatly not only from one specialty to another but from one employer, employment setting or supervising physician to another. The amount of autonomy of a PA or APN is largely determined by the provider's own confidence and comfort with the level of care being provided. Since these two practitioner types were founded on the principle of extending physician care as much as possible, state regulations have been written broadly to allow physician extenders to push their training, knowledge and skills to its limits. Physicians, rather than envisioning their role as delegating minor tasks or acting as gatekeepers of physician

extender practice, have allowed mid-level practitioners to set their own limits of care within the supervising physician's practice specialty. State regulations state simply that PAs may not practice outside the scope of their supervising physician's board specialization. The PA or APN approaches the supervising or collaborating physician for assistance on an as-needed basis.

Autonomy may also vary by employment setting or employer guidelines. For example, some emergency room physician groups require their PAs to discuss or "staff" every patient seen by the PA, while others more commonly prefer that the PA only come to the supervising physician when questions in care arise. Some emergency physicians allow PAs to see any patient in line for service without regard to patient acuity or level of care, while others restrict their PAs to seeing only "minor" emergencies or "urgent care." The difficulty in generalizing or in quantifying the autonomy issue has been an obstacle to research in this area. While there is some limited research on the tasks that PAs perform as compared to physicians, there is no literature on the level of autonomy in performing those tasks or the inherent malpractice risk in performing those tasks.

Other Limitations

Other limitations include that the research was confined to available data. These data may not be representative of all current malpractice or liability cases that involve PAs. It is possible that many cases involving malpractice or liability with regards to PAs: (a) have never been reported; (b) were settled outside of the courts or regulatory agencies; or (c) are reflected in a supervising physician's record instead of the PAs or APNs. While the NPDB staff has made assurances that PA and APN reporting has always been requested separately from supervising and collaborating physician reporting, there will always be human error in interpretation of reporting instructions and even attempts by reporting agencies to underreport or misrepresent

data in order to minimize the appearance of poor outcomes. Another limitation of the study was that not all adverse action categories were required reporting elements for PAs and APNs. Many states voluntarily reported these data, but reporting was not required by the act of Congress that established the NPDB. For those particular adverse actions categories, caution is advised about drawing conclusions from the comparative data.

Definition of Key Terms

As with any study, there are several key terms and phrases that must be identified to provide clarity and define the study's scope. Those key terms include:

American Academy of Physician Assistants (AAPA) is the professional organization that represents PAs in the U.S. (AAPA, 2007).

Advanced Practice Nurse (APN), also known as *Advanced Practice Registered Nurse (APRN,)* is a registered nurse with advanced education, knowledge, skills, and expanded scope beyond that of a registered nurse. APNs include the subcategories of Certified Nurse Midwife (CNM); Nurse Practitioner (NP); Clinical Nurse Specialist (CNS); Advanced Practiced Nurse Prescriber (APNP); and Certified Registered Nurse Anesthetist (CRNA). All advanced practice nursing credentials require specialized training, continuing education and certification. Most APNs have a master's or doctoral degree in nursing (Bryant-Lukosius & DiCenso, 2004).

Adverse action is a broad term with many meanings. For the purposes of this study, this term refers to (a) any action taken against a practitioner's clinical privileges or medical staff membership in a health care entity, or (b) a licensure disciplinary action (NPDB Guidebook,

2007). This term also refers to an action of any entity, including a governmental authority, health care facility, employer or professional organization. Actions include revocation, suspension, censure, reprimand, fine, required continuing education, counseling or monitoring (Massachusetts Board of Registration in Medicine, 2007).

Clinical privileges refer to privileges, membership on a medical staff and other memberships (including panel memberships) in which a physician, dentist, or other licensed health care practitioner is permitted to furnish medical care by a health care entity (NPDB Guidebook, 2007).

Health care entity is a (a) hospital; (b) an entity that provides health care services and follows a formal peer review process for the purpose of furthering quality health care; or (c) a professional society or a committee or agent thereof, including those at the national, state, or local level, of physicians, dentists, or other health care practitioners, that follows a formal peer review process for the purpose of furthering quality health care (NPDB Guidebook, 2007).

Health care practitioner is an individual other than a physician or dentist (a) who is licensed or other wise authorized by a state to provide health care services, or (b) who, without state authority, holds himself or herself out to be authorized to provide health acre services (NPDB Guidebook, 2007).

Health care quality is a broad-based term derived from both operational factors and from measures or indicators of quality selected and the value judgments attached to them. Previously,

quality was defined as “the degree of conformity with present standards” and encompassed all of the elements, procedures, and consequences of individual patient-provider encounters. However, the notion of health care quality has moved to measurements and outcomes looking toward peer-review, accrediting bodies, and ongoing credentialing and auditing (Sultz & Young, 2006).

Liability refers to any legal responsibility, duty, or obligation. This term also relates to damages, or an obligation one has incurred or might incur through a negligent act (Pozgar, 2007).

Licensure disciplinary action is (a) revocation, suspension, restriction, or acceptance of surrender of a license; and (b) censure, reprimand, or probation of a licensed physician or dentist based on professional competence or professional conduct (NPDB Guidebook, 2007).

Malpractice refers to professional misconduct, improper discharge of professional duties, or failure to meet the standard of care required of a professional that results in harm to another person; the negligible or carelessness of a professional person (Pozgar, 2007).

Medical malpractice payment is a monetary exchange as a result of a settlement or judgment of a written complaint or claim demanding payment based on a physician’s, dentist’s, or other licensed health care practitioner’s provision of or failure to provide health care services, and may include, but is not limited to, the filing of a cause of action, based on the law of tort, brought in any sate or federal court or other adjudicative body (NPDB Guidebook, 2007).

Medical misconduct generally includes obtaining a license fraudulently; practicing a profession fraudulently, beyond its authorized scope, with a gross incompetence; practicing a profession while impaired by alcohol, drugs, physical disability or mental disability; refusing to provide professional services to a person because of that person's race, creed, color, or national origin; permitting, aiding, or abetting an unlicensed person to perform activities requiring a license; and being convicted of committing an act constituting a crime (Pozgar, 2007).

The National Practitioner Data Bank (NPDB) was created by Congress through the Health Care Quality Improvement Act of 19896 as a national repository of information related to medical practitioners. The NPDB's primary purpose is to facilitate comprehensive reviews of physicians' and other health care practitioners' credentials (Pozgar, 2007). The *Health Care Quality improvement Act of 1986* was intended to improve the quality of medical care by encouraging hospitals, state licensing boards, and other health care entities, including professional societies, to identify and discipline those who engage in unprofessional behavior; and to restrict the ability of incompetent practitioners to move from state to state without disclosure or discovery of the practitioners' previous damaging or incompetent performance (NPDB Guidebook, 2007).

Practitioner safety refers to the extent of protection of the public and individual patients from harm by medical care providers (Sultz &Young, 2006). For the purposes of this study, the term refers to ensuring quality care to meet community standards of patient care.

Physician is a doctor of medicine or osteopathy that is legally authorized to practice medicine or surgery by a state, or who, without authority, holds himself or herself out to be so authorized (NPDB Guidebook, 2007).

Physician Assistant (PA) is a U.S. designation for non-physician clinicians licensed to provide medical care. PAs may use the post-nominal initials of PA, PA-C, RPA, or RPA-C where the C indicates "Certified" and the R stands for "Registered." PAs generally have a master's degree in medical studies from an accredited university along with a national certification. PAs are specially categorized as mid-level practitioners with the authority to prescribe medications. The scope of PA practice encompasses nearly all medical specialties including primary care, surgical, and orthopedic (AAPA, 2007).

Standard of care is a description of the conduct that is expected of an individual in a given situation. It is measured against which a defendant's conduct is compared (Pozgar, 2007).

Supervising Physician is a legal or regulatory designation defining the relationship between a physician assistant or other non-physician provider (NPP) and a physician. The defined relationship commonly includes a delegation of services agreement that delegates medical practice actions and prescription writing authority to the NPP (American Academy of Family Physicians, 2008).

Supervision means to coordinate, direct, and inspect on an ongoing basis the accomplishments of another, or to oversee, with the power to direct, the implementation of one's own or another's

intentions. The supervising physician must have the opportunity and the ability to exercise oversight, control, and direction of the services of a NPP. Accordingly, it is the responsibility of the supervising physician to direct and review the work, records, and practice of the NPP on a continuous basis to ensure that appropriate directions are given and understood and that appropriate treatment is rendered. Supervision includes, but is not limited to: (a) the continuous availability of direct communication either in person or by electronic communications between the NPP and supervising physician; (b) the active overview of NPP activities including direct observation of the NPP's ability to take a history and perform a physical examination; (c) the personal review of the NPP's practice at regular intervals including an assessment of referrals made or consultations requested by the NPP with other health professionals; (d) regular chart review; (5) the delineation of a plan for emergencies; and (6) the designation of an alternate physician in the absence of the supervisor. The circumstance of each practice determines the exact means by which responsible supervision is accomplished (American Academy of Family Physicians, 2008).

Summary

Chapter I provided an introduction to the PA profession and the current issues of liability and malpractice related to medical care provision. This chapter outlined the study's purpose, research questions, significance, and defined key terms. The PA profession has become a significant factor in the nation's health care workforce. And while PA practice safety is tantamount to both the quality and cost-effectiveness of PA medical practice, no comprehensive research exists that examines how PAs compare with physicians and other similar medical practitioners in terms of their safety record. The need for research on PA safety is clear, and research results will impact whether and how PAs are utilized in the future. In Chapter I the

reader was cautioned to bear in mind that the liability and malpractice risk of these three provider groups are different because each group provides care that varies in complexity and risk of poor outcome. The reader was reminded that the study did not intend to assess or quantify the inherent differences in malpractice risk between these three provider groups, it simply intended to report and compare outcome markers of unsafe medical practice. Physician and APN data was presented for comparison because these providers are the most similar to physician assistants in medical practice scope and training.

The next chapter, Chapter II, investigates the current literature germane to this study. Chapter II provides the historical underpinning of the PA profession, examines the impact of the PA profession on health care delivery in the U.S., analyzes risk management issues related to the PA profession, and investigates the current state of medical misconduct and malpractice of PAs.

CHAPTER II

REVIEW OF THE LITERATURE

Chapter II, the review of current literature, provides a basis for this study. Chapter II is divided into four main sections with several sub-sections within each category. The first section provides an historical underpinning of the Physician Assistant professional field. The second section analyzes the current impact of PA utilization on the nation's health care work force. Risk management is the main topic of the third section. The fourth section synthesizes literature related to medical misconduct and malpractice. The final section outlines the extent of practice safety education in the PA profession. The chapter summary integrates the section together in preparation for Chapter III, study methods.

Evolution of the PA Profession

Unlike physicians, osteopaths, and nurses, PAs have a relatively short professional history. Beginning with four trained military corpsmen in 1967 the ranks of PAs have swelled to over 60,000 certified practitioners in 2007 (AAPA, 2007). This type of growth is unprecedented for any other health care field including nursing, physical therapy, and dentistry (Medical News Today, 2004). Federal health policy changes served to spur the profession forward. Following the 1964 Stead beginning discussed in Chapter I, the first legislative support for the PA profession was the 1966 Allied Health Professionals Act (PL-751). This public law encouraged the development of training programs aimed at new types of primary care providers. The Health Manpower Act (PL-490) was passed in 1968 funding training for health care providers including PAs (Shafrin, 2006a). This year also saw the incorporation of the American Academy of Physician Assistants (AAPA), the singular organization that represents all PAs in the United States. Important marketplace movements also supported the early fledgling PA profession. In

1970 Kaiser Permanente became the first health maintenance organization (HMO) to employ PAs (Shafrin, 2006a). This led to the 1972 development of certifications for accredited PA educational programs under the auspices of the National Board of Medical Examiners (AAPA, 2007).

Further federal legislative issues followed in successive years with the 1976 Professionals Assistance Act (PL94-484) which provided monetary support of PA education, and the watershed 1977 Rural Health Clinic Services Act (PL95-210). The Rural Health Clinic Services Act was a major turning point for a profession that up until 1977 was struggling to be reimbursed by Medicare, state Medicaid programs, and many private insurers. This act provided Medicare reimbursement for PAs and nurse practitioners that provided services in rural clinics (Shafrin, 2006a).

Almost nine years transpired before the 1986 Omnibus Budget Reconciliation Act (PL99-210) allowing for Medicare Part B reimbursement for PA services in hospitals and nursing homes. In the following year (1987), the federal government strengthened this legislation by allowing Medicare reimbursement to PAs in a larger portion of the rural underserved areas and designated health professional shortage areas (HPSAs) (Shafrin, 2006a). It should be noted that though HPSAs are found in many rural locations, many also exist within metropolitan areas (Shafrin, 2006a). A full ten years later the Balanced Budget Act of 1997 (BBA97) became law. In this most recent Federal act affecting PA practice, PA reimbursement rates increased to 85% of that of physician costs across all practice settings. Previous to the BBA97, PAs were reimbursed at 75% in hospitals, 65% for assisting in surgery, and 85% for work in skilled nursing facilities (Shafrin, 2006a).

Throughout the ensuing years, the PA profession worked to ensure that PAs were able to practice in every state. Mississippi was the last state to enact legislation to authorize PA practice, and this occurred in the year 2000 (AAPA, 2007). The PA profession has enjoyed unparalleled success in the last 40 years. While the numbers of certified and registered professionals grew, the acceptance of this professional as more than a physician extender also grew. The profession is well-positioned to address critical issues of affordability, access, and quality. However, the PA profession, similar to other professional medical entities, is plagued by factors that prevent further growth. These include (a) lack of schools and universities that can subsidize their expensive training programs; (b) lack of growth of new training programs; and (c) lack of appropriate faculty to train the next cadre of practitioners. Similar to the physicians that the PA profession found a niche to fill, there now appears to be the problem of more demand and not enough practitioners (Crane, 2007).

Training and Certification

PAs spend an average of 25 months in core curriculum following a shortened form of traditional medical education. The foundational emphasis has been as a generalist serving in primary care (Simon & Link, 2001). To be accepted to a PA training program, most students already have at least two years of health care or health care related experience. Competition is fierce for acceptance with a reported five applicants for every open position nationwide. Because of the close working relationship PAs have with physicians, PAs are educated in a medical model designed to complement physician training. PA students are taught, as are medical students, to diagnose and treat medical problems (AAPA, 2000). Education consists of classroom and laboratory instruction in the basic medical and behavioral sciences (such as anatomy, pharmacology, pathophysiology, clinical medicine, and physical diagnosis), followed by clinical

rotations in internal medicine, family medicine, surgery, pediatrics, obstetrics and gynecology, emergency medicine, and geriatric medicine. To become accredited as a PA, a student must pass the national certifying examination of the National Commission on the Certification of Physician Assistants, an independent accrediting body. To remain certified, every PA practitioner must complete 100 hours of continuing medical education every two years and pass a recertification examination every six years (AAPA, 2007).

PA Impact on the Healthcare Workforce

Prior to PA and NP licensure, the only individuals permitted by law to perform a variety of medical procedures were physicians. But PAs now practice medicine in more than 60 specialty fields, treating patients with diverse disorders (AAPA, 2007). Table 1 provides a snapshot of where PAs were employed as of 2007, the most recent year that accurate data are available. It is interesting to note that the most common employer listed was a single specialty physician group. Hospitals, as employers came in second, while other physician groups followed. Community health clinics employ close to 6% of PAs reported in the 2007 AAPA Census. The data indicate that PAs have moved beyond serving rural and underserved areas to a demographic pattern similar to physicians.

Table 1. *Summary of Physician Assistants by Treating Area*

Primary Employer	Percentage
Single Specialty/physician group	31.0%
Other hospital	14.2%
Solo physician practice	12.6%
Multi-specialty physician group	12.9%
University hospital	8.6%
Community health center	5.8%
Self-employed	2.9%
HMO	1.9%
Freestanding urgent care center	1.9%
Other	18.2%

Note. These are aggregated data from the 2007 Census of the AAPA as reported by the AAPA (2007) "Other hospitals" include those acute care centers not otherwise categorized in the list. "Other" includes federal facilities such as prisons and the military, medical staffing agencies ,nursing homes, home health agencies and practice management, and unreported.

Physician assistants are beginning to specialize into diverse fields of medicine. Table 2 provides information that reviews the most recent reported specialty practice areas of PAs. While family medicine remains the most common medical field of practice, surgical subspecialties and almost all areas of medicine are represented by PAs.

Table 2. *Summary of General Specialty Areas of PA Practice*

Area of Practice	Percentage
Family medicine	24.9%
Surgical subspecialties	22.2%
Other	12.8%
Internal medicine subspecialties	11.3%
Emergency medicine	10.3%
General internal medicine	6.9%
General surgery	2.7%
General pediatrics	2.4%
Obstetrics and gynecology	2.4%
Occupational medicine	2.4%
Pediatric subspecialties	1.6%

Note. These are aggregated data from the 2007 Census of the AAPA as reported by the AAPA (2007). The "other" category includes all areas that PAs may practice that are not included in this list.

PA annual income for a full-time practitioner is found in Table 3. This represents data retrieved from the AAPA website and based on its annual census (2007). The living wage of PAs is rising, offering an upper middle-class standard of living.

Table 3. *Reported Annual Income (Full-time PAs only)*

Benchmark	Amount
Mean	$86,214
10th percentile	$64,374
25th percentile	$71,908
Median	$82,223
75th percentile	$96,010
90th percentile	$112,889

Note. These are aggregated data from the 2007 Census of the AAPA as reported by the AAPA (2007).

Cost Effectiveness

The last decade of health claims analysis has found physician extenders to be a cost-effective strategy to reducing overall health care expenses. Though salaries started relatively low 15 years ago, PAs now enjoy salaries that approach those of newly trained physicians (Sultz & Young, 2006). It seems this ongoing trend of salary growth will go unchecked unless there are other, unforeseen economic pressures, or an unanticipated surplus of physicians. Realistically, PAs supported by evidenced-based practice guidelines and computerized treatment protocols may become the patient's first point of entry into the health care system (Amara, 2000).

Health policy analysts have been interested in health care costs and methods to reduce costs while providing effective care. Hooker (2000) completed a thorough review of literature focusing on cost effectiveness in the use of PAs. The cost benefit model used by Hooker suggests that PAs can perform at least 75% of a physician's tasks at a cost of 44% of the physician's salary. He extrapolated the data finding a cost-benefit to using PAs, pointing out that

the cost of training a PA is one-fifth the cost of that to train an allopathic physician. Due to the difference in length of training between PAs and physicians, the PA will provide five years of patient care valued at $380,000 (1999 U.S. dollars) before the physician completes training. Thus, factors to consider in the cost-effectiveness of PAs include the compensation-to-production ratio which establishes the PA as a cost-effective clinician.

The Hooker cost benefit model was used by this study to determine if PAs negate their cost effectiveness through the costs of malpractice. In brief, the Hooker model, based on a comprehensive view of the literature, asserts that PAs are at least 75% as productive as physicians, are capable of managing at least 83% of all primary care encounters, and are salaried at least 50% less than physicians (Hooker & Cawley, 2003).

Researchers Anderson and Hampton (1999) provided an alternate view to cost-effectiveness of PA in their work analyzing reimbursement for PAs and NPs. Though their research supported other research efforts (e.g., Pan, et al., 1996) noting that there is a significant rural-urban difference between payment sources and use of PAs and NPs, they had surprising results when considering prepaid and HMO reimbursements. They found that prepaid or HMO reimbursement had no affect on utilization as to whether a client saw a physician versus an NP or PA. They observed this phenomenon in both rural and urban settings. After controlling for other influences, this study did show that physicians, PAs, and NPs are each as likely as the other to be present at a rural managed care visit. However, physicians are much more likely than PAs or NPs to be present at an urban managed care visit (Anderson & Hampton, 1999).

PAs Cost Effective Impact on Rural America

Rural America has benefited from the advent of PAs. Researchers Bergeron, Neuman, and Kinsey (1999) studied survey data from 285 small rural hospitals along with case studies

from 36 of those hospitals to determine the extent to which physician extenders benefited those facilities. In the aggregate study, 70% of the surveyed hospitals used nurse practitioners, 30% used PAs, and 20% used both. The hospitals in this study reported that the use of physician extenders reduced recruitment costs, operating costs, and staffing needs of those hospitals. A further benefit noted was that physicians cover only half of their own costs in the first year of practice, while PAs generate enough revenue to cover their own costs in year one of employment. Once hired, PAs reduced the average cost of operations by over 40% (Bergeron, Neuman & Kinsey, 1999).

Supporting these findings, Staton, Bhosle, Camacho, Feldman, and Balkrishnan (2007) completed a comprehensive study of the PA profession and its effect on rising health care costs and inaccessibility of many patients to physician services. These researchers performed a retrospective analysis of the National Ambulatory Medicare Care Survey Data (1997–2003) on outpatient visits. The researchers found that patients who paid out-of-pocket had higher odds of visiting PAs compared to patients with private insurance. Further, patients in rural areas were more likely to visit PAs than were patients in urban areas. The researchers concluded that "considerable use is made of PAs in all settings, and they tend to be utilized in otherwise underserved, rural populations who do not have health insurance" (p. 34).

Patient Satisfaction

Patient satisfaction and acceptance of the PA profession has helped propel the profession forward. The first patient satisfaction survey conducted soon after the first PA class graduated found that upper middle class communities more readily accepted PAs (and NPs) than lower middle class communities (Hooker & Cawley, 1997). Patient satisfaction surveys that date back to 1972 noted an inverse proportion of satisfaction when compared to the complexity of the

needed service. That is, patients were less satisfied with care the greater the medical care need. However, these are very old data and may hold little relevance to today.

Work by Hooker, Potts, and Ray (1997) examined patient satisfaction comparing PAs, NPs, and physicians. Through a mailed questionnaire method, members of a large HMO were surveyed regarding their satisfaction with care provided in 1995 and 1996. The findings suggest that patient satisfaction is dependent more on communication and style than type of provider. Thus, the authors suggest that policy decisions should move toward incorporating PAs and NPs into more medical practices as patient acceptance is gained (Hooker, Potts, & Ray, 1997). A study published in 2000 investigated patient satisfaction with PAs and wait times in an emergency department of a hospital. The findings reported that patients were very satisfied with care rendered by PAs, and few patients were willing to wait longer to see physicians versus PAs (Counselman, Graffeo, & Hill, 2000).

Managed care organizations (MCOs) have been working on methods to redesign primary care delivery systems while improving patient satisfaction. One of the cost-containment strategies targeted by MCOs is the use of associate practitioners, PAs and NPs, in care delivery systems. A study by Roblin, Becker, Adams, Howard, and Blumberg (2001) studied this MCO strategy. Their findings indicated that indeed PAs and NPs were a viable option for MCOs to employ, and that patients were very satisfied with this service delivery mode.

Risk Management and the PA

Risk management is a broad term that explores risk, risk assessments, and developing strategies to reduce potential problems or negative results (U.S. EPA, 2004). For the PA profession, risk management is related to analyzing the risk of practice and developing methods to eliminate or significantly reduce the chance of liability or lawsuits. The PA profession has

been taking steps toward risk management as a profession. Licensure for PAs in all 50 states assured that licensed and certified PAs had at least a basic PA education and had passed rigorous licensure exams (Hooker & Cawley, 1997). Physicians had been licensed since the late nineteenth and early twentieth century. Thus, the PA profession recognized the value of licensure and followed other health care professions that were also in the midst of state licensure efforts.

Licensure and state practice acts protect the public against quackery, commercial exploitation, deception and professional incompetence. Licensure boards have created methods for consumers, peers, providers, and the health insurance industry to report PAs who may be in violation of practice acts or been detrimental to the public good. Such reporting mechanisms complete with discipline procedures allow for the profession to perform internal risk management.

Unlike physician licenses, PA licensure is more complex (Hooker et al., 1997). Current contemporary issues for PAs concern the distribution of job tasks and duties. Physicians have unlimited licenses to perform all functions; the critical questions are what functions they may delegate to physician assistants, and under what conditions such delegations may occur. Functions within the scope of PA practice may be either "independent" or "dependent" of a supervising physician's orders, direction, or supervision (Kohlhepp, Rohrs, & Robinson, 2005). Autonomous yet dependent is a phrase often used to describe the PA scope of practice relationship with the supervising physician. The complexity of this relationship continues to be examined for both the PAs and their physician counterparts. Ongoing efforts to further define distribution of tasks, while ensuring that state practice acts stay current, is an area that requires ongoing risk management analysis by PAs.

Communication

Communication is the key element to all risk management efforts. Multiple studies demonstrate that effective communication with patients is the best way to avoid malpractice claims (Lester, 1993; Kaplan, Greenfield, Gandek, et al., 1996; Frankel, 1995). Communication was one of the earliest values given for the hiring of PAs. It was speculated that a PA could reduce the risk of malpractice judgments for supervising physicians since the mere presence of PA allowed the physician more time to concentrate on more complicated cases (Charles, Gibbons, Risch, et al., 1992). Further, the thought was that PAs might prevent patients from feeling rushed or deserted during a physician visit.

The AAPA Guidelines for Ethical Conduct state that PAs should disclose errors to patients if such information is significant to the patient's interest and well-being. Through serious consideration, the AAPA Government Affairs and Reimbursement Committee (GARC) presented a policy paper regarding acknowledging and apologizing for Adverse Outcomes (Gara, 2007). The committee put forward a policy that was adopted by the AAPA in 2007. The policy encourages PAs to apologize for errors. The policy also supports laws that limit the admissibility of such apologies in lawsuits (Gara, 2007).

This AAPA work mirrors the current national movement called *Sorry Works* (Braxton, Poe, & Stimmel, 2007). A majority of states have adopted or are considering apology laws that exempt apologies, expressions of regret, sympathy, or compassion from being considered as admission of liability for medical malpractice lawsuits. The intent of the legislation is to encourage physicians and other health care providers to sincerely apologize to patients. The idea behind *Sorry Works* is that open, honest discussions are the best policy. These types of conversations appear to reduce medical malpractice lawsuits (Braxton, Poe, & Stimmel, 2007).

Report Cards

Physician report cards are fast becoming a method for savvy consumers to assess how well their own provider performs on evidenced-based measures (NCQA, 2007). The initiation of such report cards met with large resistance in the 1970s when the Code of Ethics of the American Medical Association (AMA) determined that "information that would point out difference between doctors" would be strictly prohibited (Sultz & Young, 2006, p. 15). However contentious, report cards and reporting on physician practices have become commonplace. For example, Health Employer Data Information Sets (HEDIS) criteria are collected every year at every primary care clinic across the U.S. (NCQA, 2007). State health departments are further using these data to determine health care priorities and to investigate providers who are outside the collected norms of the data. Several states have begun initiatives that further take the HEDIS aggregate data dividing it into clinics and in some cases, providers. It will not be long before individual PA data become readily available for consumers, providers, and other professionals to view. It is this researcher's belief that report cards will assist with appropriate assessment of PA risk and promote the true value of PAs.

Medical Misconduct and Malpractice

In 1999, the Institute of Medicine released *To Err is Human*, which estimated that medical errors in hospitals alone cause as many as 98,000 patient deaths and more than one million patient injuries, at a cost of up to $29 billion each year (Kohn, Corrigan, & Donaldson, 2000). The last section of this review investigates medical misconduct and malpractice in the PA profession. Medical liability insurance costs remain on a steep upward trend (Kessler, Sage, & Becker, 2005). Rising costs are a concern for all health care professionals, particularly physicians who bear the brunt of these costs (Moses & Feld, 2007). These increased costs are a direct result

of ever-increasing malpractice jury awards and a public perception that someone needs to pay when an unfortunate medical outcome occurs (Sultz & Young, 2007). PAs are not immune from these trends. As physicians explore ways to reduce their own risk exposure, there is push-back for PAs to become individually responsible and liable for the care they provide without harming an overseeing physician or increasing his insurance liabilities.

Brock (1998) wrote a seminal article on the malpractice experience of PAs. He examined five years of data from the National Practitioner Data Bank (NPDB) that revealed that PAs had a very low rate of malpractice judgments. He asserted that this factor would actually lead providers to hire PAs as a way to reduce the risk of malpractice liability. Brock used data published in 1996 to determine that there were significant differences in malpractice experiences of PAs and physicians. Brock (1998) found that one claim was paid for every 46.6 physicians, but only one paid for every 808.1 PAs.

Cawley, Rohors, and Hooker (1998) also published an examination of the NPDB data in 1998. Their findings were similar to those of Brock. They examined NPDB data from September, 1990, through December 1, 1997, and found that PAs had a mean malpractice payment of $55,241 while that of physicians (MDs/DOs) was $139,581. By controlling for the number of PAs and physicians in practice, they found that physicians had a malpractice payment ratio of 2.4% while PAs had a ratio of only 0.76% (Cawley et al., 1998). One interpretation of these data are that on average, PAs had one-third the liability cost of physicians for malpractice payments. Another interpretation is that they carried one-third the risk of such payments over that time period.

The Brock and Cawley findings are now a decade old and require revisiting. At the time, only six years of data were available. Thus, this researcher integrated the findings of Brock and

Cawley as a foundation to studying the current experiences of malpractice claims. The number or PAs in practice has expanded significantly since 1998, and three times the data are now available in the NPDB for analysis than was available in 1998. Additionally, the earlier data which they relied upon may have underreported the true malpractice of PAs due to confusion regarding reporting requirements.

Historically, physicians were liable for the practice of the PAs that the physician supervised. This may have led to an underreporting of actual cases where the PA was involved in a medical error. The data that Brock and Cawley used were the first six years of NPDB existence during which time the underreporting concern may have impacted these data. More recently, there has been legislative movement to limit the liability of the supervising physician, shifting the liability to the treating PA (Gore, 2000). As professionals, PAs welcomed this movement as it ensured more accurate data that reflects PA practice alone that is not entwined with confounding variables such as supervising physicians or health care facility reporting problems. Inclusion of all available years of NPDB will therefore reflect a more accurate perspective of PA malpractice than the data used by the researchers in 1998.

Research provided information about three legal theories that are used to impute physician liability from a PA: (a) respondeat superior; (b) negligent supervision; and (c) negligent hiring (Hooker, 2000). To assess a physician's liability for PA mistakes, it is important to understand each of these legal theories and the basis for the actions that distinguish these theory applications from the typical claims.

The first legal theory is *respondeat superior,* a term referring to "let the master answer." This is a legal doctrine that states the principle or employer is liable for harms done by agents or employees while acting within the scope of their employment. This doctrine has been used to

determine medical malpractice by holding a supervising physician liable for malpractice or negligence of a PA that the physician supervises (Regan & Regan, 2002). Through this doctrine, to hold a physician or other provider individually liable for malpractice, one must demonstrate "(a) the standard of care, (b) that the provider deviated from that standard, and (c) that as a proximate result of the provider's negligent act or omission, the patient suffered injuries which would not have occurred otherwise" (Regan & Regan, 2002, p. 546).

The case of *MacDonald v United States* demonstrates the successful use of the *respondeat superior* theory. In this case, the patient was under treatment for a hiatal hernia with reflux. The patient presented to the PA with severe upper abdominal pain for which the PA prescribed laxatives for constipation and then attempted to discharge the patient. However, the patient felt the pain was too severe and refused to leave; a subsequent electrocardiogram revealed an evolving myocardial infarction. The patient suffered extensive heart damage. The physician was found liable as the court stated that, "In this case the oversight required by the standard of care was missing" (p. 548). Another case attests to the respondeat superior theory along with standard of care issues. The 1994 case *Oliver v Sadler* resulted from an instance where a patient had an anaphylactic reaction leading to multi-organ system failure. The patient claimed that she was unaware that she had been treated by a PA and believed that the treating practitioner was a physician. The jury found for the plaintiff.

Negligent supervision is the second legal theory that has been used to impute physician liability for the actions of a PA. The legal relationship between physicians and PAs has become well-established by tradition, case law, statutes, and regulations. Due to this dependent relationship, in many cases the liability for PA negligence is imputed to the physician even if the physician did not employ the PA. State laws vary with regards to negligent supervision. For

example, in Ohio, the law states, "A physician assistant's supervising physician assumes legal liability for the services provided by the PA." In Vermont, the supervising physician delegating activities to the PA shall be legally liable for such activities of the PA, and the PA shall in this relationship be the physician's agent" (Younger, 1997, p. 380). Since the work of Younger, the practice of PAs has changed such that many state laws no longer directly require the direct supervisor/supervisee relationship between PAs and physicians. With federal legislative movements including BBA97, PAs may practice without a referring physician and may even open private practices. This theory is now used less often than previously for medical malpractice that includes a PA with a supervising physician. Negligent supervision was the basis of *Andrews v United States.* In this case the court found the physician provided inadequate supervision in negligently failing to investigate a report of sexual impropriety with a patient treated by a physician assistant in which the physician had supervisory responsibility (Moses & Feld, 2007).

Negligent hiring is the third legal theory used to assert liability against a physician who employs a PA. Within this theory, an employer physician may be held liable for malpractice claims brought against a PA where the issues include inappropriate hiring, training, supervision, or monitoring; or for the physician failing to establish required or appropriate policies to ensure that their employees understand their responsibilities and job requirements (Hollowell, De Ville, & Warner, 2006).

The issue of negligent hiring is highlighted in the case *Khan v Medical Bureau of California.* This case dealt with the hiring of a PA by a physician. The physician hired an individual as a licensed and nationally certified PA on the basis of the individual's attestation of licensure. The individual was not licensed. In this case the physician had his own license revoked

for aiding and abetting the unauthorized practice of medicine. The courts found "if… a practicing physician…can claim that he could not tell from the paperwork whether an individual was licensed, than what hope is there for the average person seeking medical care?" It is the responsibility of the employer to contact the licensing agency and ensure that a license does exist for any purported licensed individual upon hire (Moses & Feld, 2007, p. 7).

Negligent hiring along *respondeat superior* may be determined to be a type of vicarious liability. Vicarious liability is a type of indirect legal responsibility for an injury. It refers to the liability of a physician for the negligence of another based solely on the nature of the relationship between the two parties. Where physicians are employers of a PA, the employing physician may be held liable for negligence of PAs within their scope of employment (Kachalia & Studdert, 2004).

The most common form of a malpractice suit against any type of health care provider is the tort of negligence (West Group Publishing, 1999). A tort is defined as a civil wrong for which a remedy may be obtained, usually in the form of monetary damages (Druss, Marcus, & Olfson, 2003). For a plaintiff to be successful in a medical malpractice lawsuit, the plaintiff's attorney must prove four things. First, that the provider has an obligation or duty of care for the patient. Second, this duty was violated or breached by practice that was below the accepted standard of care. Third, that this substandard practice caused the harm. And fourth, that the plaintiff suffers compensable damages (Moses & Feld, 2007).

The basis of malpractice claims brought against non-physician providers, such as PAs, most often includes one or more of the following five allegations. The five allegations are: (a) lack of adequate supervision by a physician; (b) untimely referral to a consultant; (c) failure to diagnose properly; (d) inadequate examination; and (e) negligent misrepresentation (Moses &

Feld, 2007). Each of these allegations has been used in malpractice cases against PAs or NPs. AAPA provided a series of articles termed "*Issues in Quality Care"* in the *Journal of the American Academy of Physician Assistants.* Davidson (1996) addressed each high risk allegation area through case scenario examples. The outcome of the series was to direct PAs to take proper precautions to reduce risk of liability and subsequent lawsuits. Risk reducing activities include: (a) ensuring that one has adequate physician supervision; (b) making timely referrals; (c) knowing the limits of one's own diagnostic skills and remaining within the permissible scope of PA practice; and (d) conducting an examination that is appropriate for the patient complaint (Davidson, 1996).

PA state practice acts are moving toward more autonomy for PAs. This means that PAs are beginning to practice with less supervision than was required even five years ago. Further, physicians may not always be held liable for the negligent acts of PAs. With practice act revisions nationwide, PAs are now encouraged to purchase their own malpractice insurance and be responsible for their own negligent acts (Pozgar, 2007). However, case law is still scant in the move to sue PAs without including a supervising physician in the lawsuit.

National Practitioner Data Bank

The National Practitioner Data Bank (NPDB) was established under Title IV of Public Law 99-660, the Health Care Quality Improvement Act of 1986. It has acted as a clearinghouse of information relating to medical malpractice payments, certain adverse actions taken against practitioners' licenses, clinical privileges, professional society memberships, and eligibility to practice in Medicare/Medicaid. These databank is germane to this current research and was the source data used in the methodology portion of this research. The most recent annual report of the NPDB was placed in the public domain in 2006, containing data through 2005 (NPDB,

2006). However, the public use data file, which was used for this research, is updated continuously throughout the year.

The NPDB receives reports of malpractice payments and adverse actions concerning health care practitioners in the U.S. The NPDB is the depository for medical practitioner misconduct whose reporting is required by federal law from the following sources: medical malpractice payers; medical/dental state licensing boards, hospitals and other health care entities, professional societies with formal peer review, the Department of Health and Human Services Office of Inspector General, the U.S. Drug Enforcement Agency (DEA); federal and state government agencies, and health insurance plans.

In 2005, the majority of reported actions were for medical malpractice payments for physicians, dentists, and other licensed practitioners. The report also included adverse actions taken against a provider's ability to practice. Such adverse actions included: licensure actions, clinical privileges actions affecting a practitioner's privileges for more than thirty days, Medicare/Medicaid exclusion actions, professional society membership disciplinary actions, and actions taken by the DEA concerning authorization to prescribe controlled substances. The work of Brock (1998) and Cawley, et al. (1998) was based on data culled from the NPDB. This current research included datasets and findings that were more comprehensive than earlier work based on 1991-1996 data.

In 2005, physicians had more reports per practitioner than any other practitioner group. However, the report cautions that NPDB reporting of state licensure, clinical privileges, and professional society membership actions are only required for physicians and dentists. Thus, not all PA state licensure actions may be part of the current database sets. Physicians were responsible for eight out of ten malpractice payment reports in 2005. However, the number of

physician malpractice payments reported decreased by 2.5 percent from 2004 to 2005. During 2005, physicians were responsible for 14,034 malpractice payment reports equating to 81.1 percent of all malpractice payment reports received during the year. In contrast, only about two out of 100 malpractice payment reports were for all types of nurses while less than one percent was for PAs.

Health insurance plans, HMOs, and providers all use the NPDB in hiring processes for medical practitioners that are covered by reporting criteria for the NPDB. These entities are required by the Centers for Medicare and Medicaid (CMS) to investigate licensed practitioners to ensure that sanctioned and non-licensed individuals are not treating patients (NPDB, 2006).

Education in Clinical Practice Safety

As a science with new treatments and discoveries occurring on a daily basis, education in medicine is a life long process. The education of physician assistants may be divided into pre-service and in-service aspects. As noted earlier, the education of physician assistants most often begins after the completion of an undergraduate degree and plan of study that includes courses in the basic sciences and health sciences. Once accepted into the average two-year graduate professional program, further courses are taken in the clinical sciences which parallel those of medical students (Simon & Link, 2001). The curriculum of PA programs is dictated by the Atlanta-based Accreditation Review Commission on the Education of Physician Assistants, Inc. (ARC-PA). All PA professional programs must adhere to the standards outlined by this organization to attain and maintain accreditation. Graduation from an accredited PA program is required by all 50 states for graduates to receive professional licensure. Standard B6 outlines curricular requirements for the provision of education in health policy and professional practice issues including quality assurance, risk management, legal issues of health care, political and

legal issues that affect PA practice, and professional liability. Table 4 provides an outline of the accreditation standards relevant to health policy and professional practice. Specific requirements relevant to medico-legal education and patient safety are bolded.

Table 4. *ARC-PA Standards for Health Policy and Professional Practice*

Standard Designation	Standard
B6.01	The program must provide instruction in: a) the impact of socioeconomic issues affecting health care. b) health care delivery systems and health policy. c) reimbursement, including documentation, coding, and billing. **d) quality assurance and risk management in medical practice.** **e) legal issues of health care.** f) cultural issues and their impact on health care policy.
B6.02	The program must provide instruction in medical ethics to include: a) the attributes of respect for self and others. b) professional responsibility. c) the concepts of privilege, confidentiality, and informed patient consent. d) a commitment to the patient's welfare.
B6.03	The program must provide instruction on: a) the history of the PA profession. b) current trends of the PA profession. c) the physician-PA team relationship. **d) political and legal issues that affect PA practice.** e) PA professional organizations. f) PA program accreditation. g) PA certification and recertification. h) licensure. i) credentialing. **j) professional liability**. k) laws and regulations regarding prescriptive practice.

Note. This table is taken from the ARC-PA *Standards,* page 14, Third Edition with clarification, 10.07.

On the in-service side, continuing education for physician assistants may take many forms. To remain certified, every PA practitioner must complete 100 hours of continuing medical education (CME) every two years and pass a recertification examination every six years (AAPA, 2007). Certification and recertification is provided by the National Commission on Certification of Physician Assistants (NCCPA). During every two-year period, PA-C designees must earn and log a minimum of 100 hours of CME and submit a certification maintenance fee

to NCCPA by June 30 of their certification expiration year (NCCPA, 2008). The 100 hours of CME may include clinical and professional topics. One of the most common means for clinically practicing PAs is to attain CME credits at state and national professional conferences where the CME has been pre-approved for credit by the American Academy of Physician Assistants (AAPA), American Academy of Family Physicians, American Medical Association or other approved body. According to Shelly Hicks, the CME planner for the AAPA professional conferences, seminars on practice risk management, PA malpractice experience and other legal aspects of PA practice are annually offered by the AAPA and are well attended (Hicks, S., personal communication, April 16, 2008). A review of the 2008 CME offerings lists nine seminars with a medical-legal topic. A sample of the titles of the 2008 seminars include: a) "Medical Malpractice/Risk Management for the Allied Healthcare Professional;" b) "The Anatomy of a Medical Malpractice Case;" c) "Saying 'I'm Sorry' for the Physician Assistant;" d) Public Reporting of Medical Statistics and Outcomes in Hospitals: Gaming the System;" and e) Asset Protection for the Physician Assistant: Could I Lose It All?" (AAPA, 2008).

A second area of CME opportunities on legal issues for physician assistants includes periodicals of the American Academy of Physician Assistants and the Physician Assistant Education Association. While a recent search for articles going back 10 years in the PAEA Journal retrieved no results for legal or malpractice searches, a similar search in the Journal of the American Academy of Physician Assistants revealed only three articles since 2000, one on apologizing for medical errors, one on avoiding malpractice for breast cancer diagnosis through documentation and one on reducing medical errors in primary care. The AAPA also publishes a monthly professional newsletter, *AAPA News* that contains a monthly article on PA malpractice issues and malpractice insurance. It is written by a representative of the malpractice insurance

industry who is a member of the AAPA services staff. The AAPA contracts with a private insurer to provide AAPA members with optional individual malpractice insurance. As previously described, most PAs are covered by their supervising physician's malpractice policy, but the AAPA still encourages its members to purchase additional individual policies. A future study of interest would include a survey to determine how many PAs carry their own malpractice policies in addition to the coverage from the supervising physicians' policies and to determine if those duplicate policy holders are sued more or less frequently than their peers without duplicate coverage.

Summary

Chapter II, the comprehensive review of current literature, began by tracing the historical growth of the PA profession. From this historical underpinning, this researcher investigated the literature related to the impact of the PA profession on the health care work force. The impact on health care access has been significant, especially in rural and medically underserved areas where the profession was first developed. Cost-effectiveness and patient satisfaction with the PA profession has also been well documented. The third section of this chapter analyzed risk management as it relates to PAs while the last section synthesized available information regarding medical misconduct and malpractice. The researcher included several cases to highlight the types of malpractice cases that have been successfully prosecuted against PAs. The courts are challenged in determining the extent of liability and culpability of PAs as practitioners independent of their supervising physicians, though the trend is to hold PAs separately accountable.

The extent of accountability of medical practice between the PA and the supervising physician may be treated differently in different courts. This literature review laid the foundation

for the investigation into the safety of PAs. Through the literature review of Chapter II, the researcher highlighted the concern of patient safety in the integration of PAs into health care practices. This researcher attempted to show that the PA profession is relatively new with little research into the safety of PAs as determined by malpractice cases or NPDB reports. Additionally, it was demonstrated that PA practice safety and malpractice education is required in PA training programs, that some literature on malpractice issues is available to in-service practitioners, and that very few articles with a medico-legal topic are published in PA professional journals. Next, Chapter III, presents the methodology section of the study and lays the conceptual framework and methods to be employed in data collection and analysis.

CHAPTER III

CONCEPTUAL FRAMEWORK AND METHOD

Conceptual Framework

The conceptual framework of the study was based on Donabedian's classic structure/process/outcome (SPO) model as a tool for assessing health care quality (Donabedian, 1966; Burns, 1995). Donabedian defined structural measures of quality as the professional and organizational resources associated with the provision of care, such as staff credentials and facility operating capacities. Process measures of quality refer to the tasks done to and for the patient by practitioners in the course of treatment (Gustafson & Hundt, 1995). Outcome measures are the desired states resulting from care processes, which may include reduction in morbidity and mortality, and improvement in the quality of life (Kane & Kane, 1988). Practitioner safety is a factor in the process of the SPO model while patient safety is the desired outcome. This is exemplified by an adaptation of the Donabedian SPO health quality assessment model proposed for the Australian government's national health care system (Sibthorpe, 2004) (see Figure 1).

Donabedian (1988) noted a distinction between two types of outcomes. Technical outcomes encompass the physical and functional aspects of care. Examples of technical outcomes include the absence of post-surgical complications and the successful management of hypertension and other chronic conditions. Interpersonal outcomes encompass dimensions of the "art" of medicine. These include patient satisfaction with care and the influence of care on the patient's quality of life as perceived by the patient. Within Donabedian's framework, these two types of outcomes are interdependent, so that one cannot be considered in isolation from the other in evaluating the quality of care.

Figure 1.[1] *Framework for Performance Assessment in Primary Health Care*

GOVERNMENT PRIMARY HEALTH CARE SERVICES AND PROGRAMS

I. STEWARDSHIP	II. ORGANIZATIONAL STRUCTURES	III. PROCESSES OF CARE	IV. OUTCOMES		**Australian National Health Performance Framework**
Policy development - clear objectives Financing and Funding - +/- incentives Implementation - contracting - reporting requirements Workforce development IT infrastructure support R &D	Physical facilities and equipment **Staffing, including deployment** **Staff training and development** **Human resources management** **Service organization and management, including protocols** Financial management Information systems Needs assessment **Performance assessment**	**Sick care (including curative, rehabilitative, palliative)** Health promotion Disease Prevention Advocacy Community development	Levels of health risk behaviors in client populations Levels of clinical status measures in client populations **Levels of satisfaction with care in client populations**		TIER I Health Status and Outcome TIER II Determinants of Health TIER III Health System Performance: Effective Appropriate Efficient Responsive Accessible **Safe** Continuous Capable Sustainable

Further, Donabedian (1966) asserted that the three categories of quality measures, structure, process and outcome, are not independent but are linked in an underlying framework. Good structure should promote good process and good process in turn should promote good

[1] Adapted from Beverly Sibthorpe, Australian Primary Health Care Research Institute, 2004

outcome (Donabedian, 1988). This provided a theoretical rationale for linking outcome with structure.

The variables of this study on practitioner safety were linked to structure, process and outcome elements of Donabedian's model. The elements of the Donabedian model that were linked to study variables are bolded in Figure 1. The independent variables, the medical practitioners, comprise a key staffing and deployment component of the organizational structure. Their performance is influenced and affected by the organizational structure through the amount of staffing provided, staff training and development, human resource management, adherence to service protocols and practitioner performance assessment. The practitioner variables are also key components of the process of care as they comprise the corps of care provision. The study dependent variables, markers of practitioner safety, were linked to the organizational structure as they are affected by staff training and development, human resource management, practitioner adherence to protocols and practitioner performance assessment. The outcomes of patient satisfaction and the safety of care provision were linked to both independent and dependent variables. Patient satisfaction is influenced not only by the type of provider but by the provider's characteristics as portrayed by each dependent variable. In the study's linkage to the Donebedian model, safety of care itself was measured by the dependent variables as markers of safety. Figure 2 provides a model specification chart demonstrating the relationship between elements of the Donabedian model and the study variables.

Figure 2. *Model Specification Chart*

Donabedian Framework Category	**Donabedian Framework Factors**	**Proxy Variables**
Organizational Structure	Staffing, including deployment	Physicians, PAs, APNs; Average years of practice; Practitioner gender
Organizational Structure	Human resources management	Physicians, PAs, APNs
Organizational Structure	Service organization and management, including protocols	Physicians, PAs, APNs; Average years of practice; Practitioner gender
Organizational Structure	Performance Assessment	Malpractice incidence, malpractice payments, clinical privileges actions, professional society actions, Federal program exclusions, DEA actions
Processes of care	Sick Care	Physicians, PAs, APNs
Outcomes	Levels of satisfaction with care in client population	Malpractice incidence (patient driven); Malpractice amounts
Outcomes	Overall Safety of Care Provision	Malpractice incidence, malpractice payments, clinical privileges actions, professional society actions, Federal program exclusions, DEA actions

Health care consumers play a significant role in the reporting and documentation of practitioner safety as poor outcomes and patient harm are often brought to the attention of authorities by consumers themselves. Donabedian further studied the role of the consumer in quality assurance in the 1990s (Donabedian, 1992). Donabedian contended that consumers have three main roles in the assurance of quality in health care: (a) consumers can be *contributors* to quality by helping to define it, evaluating it, and providing information which will allow others to evaluate it; (b) consumers can be *targets* for quality assurance by conceiving of practitioners and patients as jointly engaged in the production of care, when they are used as a means to

regulate practitioner's behavior; and (c) consumers can be *reformers* of health care by direct participation at the patient care level by provision of support by the administration which empowers consumers to have an effect on the systems of care, by influencing the "markets" of health care provision and by political action. Quality assurance is defined as "an activity aimed to elicit information about clinical performance, and based on that information, to readjust the circumstances and processes of health care" (p. 246). Donabedian concluded that when consumers are allowed to help practitioners, they can make a considerable contribution to enhancing the quality of care.

Donabedian's framework of consumer participation in the assessment of health care quality was essential to this study. The data used to drive the study have their bases in consumer actions. That is, concerns about the quality of one's medical care or that of a loved one are often initiated by the health care consumer. Consumers have a variety of mechanisms for making concerns known. The first mechanism is to approach the entities whose purpose includes the monitoring of health care quality and consumer protection. These entities include hospitals, better business bureaus, state medical licensing boards, insurance agencies, professional associations and federal and state government regulatory agencies. A second option available to consumers is to take civil action through the courts. A third is to voice concerns of safety through the news media.

Since 2000 six states have enacted legislation supporting the creation of a state patient safety center. These entities include: the Florida Patient Safety Corporation; the Maryland Patient Safety Center; the Betsy Lehman Center for Patient Safety and Medical Error Reduction (Massachusetts); the New York Center for Patient Safety; the Oregon Patient Safety Commission; and the Pennsylvania Patient Safety Authority (Rosenthal & Booth, 2004).

All six centers are designed to house and coordinate statewide patient safety activities. Specifically, patient safety centers are charged with promoting patient safety through a variety of activities, which vary by state but may include:

- Educating health care providers and patients regarding processes that may reduce future occurrences of adverse events;
- Developing systems of near miss and/or adverse event data reporting, collection, analysis, and dissemination to improve the quality of health care;
- Fostering the creation of safety cultures to identify and determine the causes of adverse events and near misses;
- Informing consumers about patient safety issues;
- Serving as a clearinghouse for the development, evaluation, and dissemination of best practices;
- Promoting ongoing collaboration between the public and private sectors and
- Coordinating state agency initiatives (Rosenthal & Booth, 2004).

This study utilized data reported by the entities whose role is consumer protection, entities that encourage consumer participation. The study's data came directly from state medical licensing boards, hospitals, professional societies with formal peer review, the office of the Inspector General of the U.S. Department of Health and Human Services, malpractice payers, and the U.S. Drug Enforcement Agency (see Figure 3).

With Donabedian's SPO model as the theoretical and conceptual basis of the study, the study itself set out to update, build upon and expand the limited work of researchers in the 1990s who examined malpractice of physician assistants. Brock (1998) and Cawley et al. (1998) independently examined the malpractice experience of PAs using data from the National

Practitioner Data Bank (NPDB). At the time, the data revealed that PAs had a very low rate of malpractice judgments. Brock asserted that this factor would actually lead providers to hire PAs as a way to reduce the risk of malpractice liability. Brock used data published in 1996 to determine that there were significant differences in malpractice experiences of PAs and physicians. Brock (1998) found that for one claim paid for every 46.6 physicians there was one for every 808.1 PAs. The findings of Cawley's group were similar and have been outlined in Chapter II (Cawley et al., 1998). This study set out to develop a better and current understanding of the earlier research and conclusions drawn.

There are several shortcomings to the earlier 1998 work which necessitated the further investigation of this research. The researchers utilized only a subset of the data available - they examined only medical malpractice payments. Additionally, the dataset used in 1998 was limited to the first six years of the existence of the NPDB. During the first years of the NPDB, underreporting of PA malpractice and misconduct was likely due to agency reporting of PA misconduct under the name of the supervising physician. The current research examined not only medical malpractice payments, but a variety of other adverse actions taken against PAs, APNs, and physicians. Those actions are contained in the NPDB records database as outlined in Figure 3 and constituted the variables that were studied.

The methodology of the study was an analysis of the independent variables between the three provider types for comparisons, relationships and statistical significance. The methodology examined 324,285 total entries of medical malpractice payments and adverse actions taken against providers in a 17 year study period. As outlined above, these variables were linked to Donabedian's framework of health care quality assessment though the framework's inclusion of patient and provider safety outcomes.

Research Questions

The intent of this study was to determine whether the practice of medicine by physician assistants is as safe as the practice of medicine by physicians? Specifically, research questions for this study included: (a) Do PAs negate their cost effectiveness through the costs of malpractice?; (b) Is the rate of malpractice for physician assistants at the same trajectory as that of physicians and advanced practice nurses?; (c) Is the ratio of malpractice claims per provider the same for physician assistants, advanced practice nurses and physicians?; and (d) Are the reasons for disciplinary action against PAs and APNs the same as those for physicians?

Hypothesis

Based on the limited prior research, it would not be unreasonable to assume that physician assistant medical practice is at least as safe as the medical practice of physicians. However, enough time has passed for a meaningful exploration, reliable national data are now available, and the PA profession has grown considerably in size and scope. Therefore, this study assumed the null hypothesis. That is, there is no statistically significant difference between the safety of physician assistant medical practice, advanced practice nurse medical practice, and physician medical practice as determined by malpractice medical payments and actions taken against a practitioner's ability to practice. The null hypothesis was also applied to each dependent variable and for the research sub-questions. That is, it was hypothesized that PAs do not negate their cost effectiveness through malpractice payments, the rate of malpractice payments is the same and the ratio of malpractice claims per provider is the same for PAs, physicians and APNs. Finally, it was hypothesized that the reasons for disciplinary action are the same for these three provider groups.

Data Source

Data utilized in the study are a subset of data available in the National Practitioner Data Bank (NPDB). The NPDB is a repository of national data on the incidence and amount of malpractice payments by health care providers and actions taken by regulatory bodies against health care providers' ability to practice in the interest of patient and public safety. The NPDB was created by the 1986 congressional Health Care Quality Improvement Act, also known as Title IV of Public Law 99-660. According to the NPDB Guidebook, the intent of Title IV of Public Law 99-660 was to improve the quality of health care by encouraging state licensing boards, hospitals and other health care entities, and professional societies to identify and discipline those who engage in unprofessional behavior; and to restrict the ability of incompetent physicians, dentists, and other health care practitioners to move from state to state without disclosure or discovery of previous medical malpractice payment and adverse action history. Adverse actions can involve licensure, clinical privileges, and professional society memberships (NPDB Guidebook, 2007). The Health Quality Improvement Act of 1986 requires hospitals, other health care entities, professional societies, medical malpractice payers and the Office of the Inspector General to report malpractice payments, adverse licensure actions, professional review actions, clinical privilege actions, exclusions for Medicare and Medicaid programs and Drug Enforcement Agency Actions to the NPDB within 30 days of the activity. All of the above reporting is required for physicians and dentists. All of the above are required reporting for PAs and APNs except licensure actions, clinical privilege actions and professional society actions. The law also requires hospitals to *query* the NPDB prior to the granting of hospital privileges for any credentialed health care provider and every two years thereafter.

This research study was a secondary analysis of the publicly available data file of the NPDB. Reporting of the malpractice and adverse actions by states and U.S. territories to the NPDB is required by federal law, although some data in the databank are voluntarily reported. The NPDB 2007 data contain information on disclosed reports of malpractice payments and adverse actions of health care practitioners from September 1, 1990 through December 31, 2007. The full NPDB data consist of 414,404 cases and dozens of variables, including information about the characteristics of a variety of healthcare providers with medical malpractice payments and practice-limiting actions, not just physicians, PAs and APNs. The categories of actions which define medical misadventure reported by the NPDB include those outlined in Table 5. The NPDB maintains a website, and the public data are available for downloading and analysis (http://www.npdb-hipdb.hrsa.gov).

Sample

A 17 year selection of all data collected by the National Practitioner Databank was used, from January 1, 1991 through December 31, 2007, to examine a variety of factors and trends in medical misconduct between three groups of practitioners (NPDB, 2008). The first and current years of data were not used because data is incomplete. The number of total data entries for physicians, physician assistants and advanced practice nurses during the period of examination was 324,285.

Demographic Data

Demographic data on the number of active practitioners in each of the three provider groups came from the considered most reliable sources. The number of physicians came from the American Medical Association master file as reported in the AMA annual publication *Physician Characteristics and Distribution in the US.* Physician assistant demographic data came from the American Academy of Physician Assistants, a national association that conducts annual surveys

of its members. Procuring reliable data on APNs was more difficult. There is no central or national professional association that represents advanced practice nurses. APN is a term that encompasses at least four different advanced practice nursing professional designations including nurse midwife, nurse anesthetist, clinical nurse specialist, and nurse practitioner. There are multiple certifying bodies for these designations and competing national professional associations, none of which survey all designations. To compound the difficulty in obtaining accurate demographic data, nurses in advanced practice often designate themselves in multiple advanced practice categories. For example, a clinical nurse specialist may also consider themselves a nurse practitioner and report themselves as both on surveys. This is reported as an inherent problem in the only national survey that includes all advanced practice nursing designations, the *National Sample Survey of Registered Nurses* (NSSRN) conducted by the Health Resources and Services Administration of the U.S. Department of Health and Human Services, Bureau of Health Professions. The NSSRN disclaimer reports in part that NSSRN samples RNs who may also claim APN preparation, numbers may include many who are not currently practicing in their specialty but who were once prepared and completed an APN program earlier in their careers, and that respondents could be certified in multiple specialties by multiple organizations (U.S. HRSA, 2004). Although the APN numbers are known to be inflated, researchers recognize that there is no other or better national database containing APN demographic information over time and so researchers continue to use the HRSA APN data. Therefore this researcher has also chosen to use the HRSA APN demographic data for numbers of APN providers.

Figure 3.[2] *National Practitioner Data Bank at a Glance*

National Practitioner Data Bank at a Glance

The National Practitioner Data Bank was established under Title IV of Public Law 99-660, the *Health Care Quality Improvement Act of 1986*. NPDB is an information clearinghouse to collect and release information related to the professional competence and conduct of physicians, dentists, and other health care practitioners.

Who Reports?

- **Medical malpractice payers**
- **Medical/Dental State Licensing Boards**
- **Hospitals and other health care entities**
- **Professional societies with formal peer review**
- **HHS Office of Inspector General**
- **US Drug Enforcement Administration**
- **Federal and State Government agencies**
- **Health plans**

What Information is Available?

- **Medical malpractice payments** (all health care practitioners)
- **Adverse actions** - based on reasons relating to professional competency and conduct (primarily physicians/dentists)
  - o Licensing actions: revocation, suspension, censure, reprimand, probation, surrender, denial of an application for renewal of license and withdrawal of an application for renewal of license (reported as a voluntary surrender)
  - o Clinical privileges actions
  - o Professional society membership actions
- **Medicare and Medicaid exclusions** (all health care practitioners)
- **US Drug Enforcement Administration actions** (all health care practitioners)

Who Can Query?

- **Hospitals**
- **Other health care entities** with formal peer review
- **Professional societies** with formal peer review
- **Boards of Medical/Dental Examiners** and other health care practitioner State Licensing Boards
- **Plaintiffs' attorneys** or plaintiffs representing themselves (limited)
- **Health care practitioners** (self-query)
- **Researchers** (statistical data only)

[2] Adapted from the National Practitioner Data Bank (2006). Retrieved from http://www.npdb-hipdb.hrsa.gov/pubs/Data_Banks_at_a_Glance.

Health care providers in this study were selected and reclassified into three types: (a) physicians including allopathic physicians (MDs), osteopathic physicians (DOs) and physician interns/residents; (b) physician assistants; and (c) advanced practice nurses (APNs) which include nurse anesthetists, nurse midwives, nurse practitioners, advanced practice nurses and clinical nurse specialists (see Appendix B).

Method and Research Design

The NPDB Public Use Data File was downloaded from the NPDB website (www.npdb-hipdb.hrsa.gov/publicdata.html). Data from January 1, 1991 through December 31, 2007 was extracted for analysis. Four report types were reclassified into adverse action reports employing data with formats in use before and after 11/22/1999. Malpractice payments were examined using data formats before and after 1/31/2004. Health care providers in the study were reclassified into three types: (a) physicians, including allopathic physicians (MDs), osteopathic physicians (DOs) and physician interns/residents; (b) PAs; and (c) APNs. All other practitioners were excluded.

The identified data were used to determine the following: trends in malpractice incidence, payment amount and adverse action incidence; ratios of medical malpractice payments by provider type; and comparisons of PAs to physicians and APNs in all variables studied. Payment averages, median of payment, total of payment and total amount of payment (provided as 1991 dollars for prior study comparisons and also adjusted for inflation to constant 2008 dollars). Inflation adjusted amounts were calculated using inflation percent for each year with a formula generated by the Consumer Price Indexes of U.S. Department of Labor. Other variables in this study included adverse licensing or credentialing actions, professional society actions, age group, time in practice, gender, state of license, and basis for action.

A chi-square test (also chi-squared or $\chi 2$ test) is any statistical hypothesis test in which the test statistic has a chi-square distribution when the null hypothesis is true, or any in which the probability distribution of the test statistic (assuming the null hypothesis is true) can be made to approximate a chi-square distribution as closely as desired by making the sample size large enough. Specifically, a chi-square test for independence evaluates statistically significant associations between proportions for two or more groups in a data set (Wikipedia, 2008). The proportions of the groups being compared may be different but statistically associated. For this study associations are being tested between dependent variables for three groups in the dataset: physicians, PAs, and APNs. The chi-square distribution is a family of probability density curves defined by the number of degrees of freedom. The degrees of freedom depend on the number of categories and is calculated as (number of rows-1) X (number of columns-1). For example, if there is a 2x2 table, the degrees of freedom are calculated as (2-1) x (2-1) = 1.

The formula used to calculate: $\chi^2 = \sum \frac{(Observed - ExpectedValue)**2}{ExpectedValue}$

Statistical analyses used in this study included chi-square analyses to explore associations among the dependent variables including provider's year of practice, state of license, number and amounts of medical malpractice payment, and number of type of adverse action reports. The chi-square is a good choice since we are most often comparing three groups and looking for statistically significant associations between these three groups in the data set.

One-way analysis of variance (ANOVA) is used for a continuous outcomes for >2 (unpaired) independent groups. It is used to test for a difference in the mean outcome level between three or more independent groups. If we have a significant result from ANOVA, we may be interested in testing which of the groups differ from each other (post hoc tests) by using a selected method such as that of Tukey or Scheffe for multiple comparisons. An ANOVA result is

significant if the result of at least one pair is significant (in our case we will describe this as a significant difference). The null hypothesis is rejected if a statistically significant difference is found to exist. When there is an unequal size such as among Physician, PA, and APN data, Scheffe's method ANOVA is used because it is a better choice.

A one-way ANOVA method was used for pair-wise comparisons among three types of healthcare providers: PAs and physicians; APNs and physicians; and PAs and APNs. The significance level was set at $p \leq 0.05$. SAS version 9.1.3 for Windows was used to analyze data (SAS Institute, Carry, NC).

Table 5. *Variables Studied*

Independent Variables	Dependent Variables
Physician Assistants	Total Number of Malpractice Payments
Physicians (MD, DO)	Average Amount of Malpractice Payments
Advanced Practice Nurses	Average Years of Practice
	Total Number of Adverse Events/Actions
	State and Medical Board Licensing Actions
	Clinical Privileges Actions
	Professional Society Membership Actions
	Practitioner Exclusions from Medicare and Medicaid Programs
	U.S. Drug Enforcement Agency (DEA) Actions
	Year of Adverse Action
	Basis for Action
	State of License

The independent variables used in the study were reported by the NPDB as the field of license. The independent variables were defined in Chapter 2. Field values from the database for each category of clinician, the independent variables, are presented in Appendix A. The total number of adverse events variable included 52 different types of actions taken against a clinician or clinician's license (see Appendix B). The variables of state and medical board licensing actions, clinical privileges actions, professional society membership actions, practitioner exclusions from state or federal programs, and U.S. DEA actions were all reported separately by

the NPDB as sub-fields of adverse actions (see Appendix B). The variable of malpractice payments included payments made by insurers, state patient compensation funds, excess judgment funds or other similar state funds. Payment amounts were analyzed unadjusted and adjusted for inflation by the researcher to 1991 dollars. The basis for action variable contained 149 causes for action against a clinician or clinician's ability to practice (see Appendix C).

The following was determined: trends in malpractice incidence and amounts, trends in other defined adverse actions, ratios of medical malpractice payments and defined adverse actions, ranking from most common to least common bases for actions, ranking of malpractice and adverse action incidence by state and comparisons between physicians and PAs, physicians and APNs, and APNs and PAs for all variables studied. For the malpractice variables, payment averages, median of payment and total amount of payment was calculated. Dollar values were adjusted for inflation by changing all payments to 1991 dollars using inflation percent for each year with calculated formula adapted from consumer price indexes of U.S. Department of Labor. 1991 dollars were chosen so that direct comparisons could be made with the work of Brock and Cawley et al.

Data Presentation

The data were presented in table, graph and chart formats. The following data presentations were presented:

- A set of tables, comparing the thee provider groups in each of the variables for the full 17 year period
- Tables and graphs of trends in adverse actions for each dependent variable by year
- Ratios of adverse actions per provider group and adverse actions per provider

- Years in practice at time of adverse action and age grouping at time of adverse action
- Tables for each of the dependent variables comparing PA to physician, PA to APN and physician to APN
- Summary tables comparing provider groups in basis for action, malpractice payments and adverse actions

Limitations

This study of PA practice and currently observed liability issues has limitations. As with most studies, the research was confined to the available data. These data may not be representative of all current malpractice or liability cases that involve PAs. The data used were provided solely through federal reporting requirements. It is possible that some cases involving malpractice or disciplinary actions of PAs have never been reported, were settled outside of the courts or regulatory agencies, or were reflected in a supervising physician's records versus that of a PA.

Liability and Specialty Differences

No comparison of malpractice incidence across disciplines is fair without an understanding of the liabilities undertaken by each discipline. While this study demonstrated differences in malpractice incidence, payment amounts, and adverse action incidence between PAs, APNs and physicians, the reader is cautioned and reminded that each of these medical provider groups is comprised of a different compilation of medical practice specialties with a subsequent difference in malpractice risk. The data set utilized did not allow for direct comparisons across the three provider groups by specialty of practice. Only APN midwives and

anesthetists were reported separately and only because they are certified separately from other APNs.

Role Differences

Additionally, physician assistants at their founding were designed to be dependent practitioners, working alongside physicians as their assistants rather than as their substitutes. Although PA practice has become more autonomous than its founders may have anticipated in the 1960s, it is generally recognized that PAs are not expected to possess the full medical knowledge base of physicians nor are they expected to manage the most complicated of patients without assistance from a supervising physician. Likewise, licensing and regulatory agencies recognize that APNs do not possess the same degree of training as physicians and therefore require a collaborating physician for APNs in much the same manner as a supervising physician is required for PAs.

The reader is therefore cautioned to bear in mind is that PAs and APNs may not as a whole take on the same level of malpractice risk as physicians. PAs and APNs may not perform some medical care that carries inherently greater risk to the patient and higher liability for the clinician. Some examples of this include that PAs in orthopedic and cardiovascular surgery may assist in surgeries but actually not perform the surgery itself. PAs working in obstetrics may provide both pre and post-natal care of the mother, but may not actually provide childbirth services. Thus we may expect physicians in these specialties to have a greater number of malpractice claims than the PAs working under them in these specialties. Conversely, an APN nurse midwife may have an equal or even greater malpractice risk that of an obstetrician physician because they do deliver babies, often far from a medical facility. The ability to account for variations in risk by task or is not the intent of this study.

Likewise, it is not the intent of this study to determine what that difference in risk is between these provider groups. The study is not intended to determine, define or quantify the differences in liability or malpractice risk between PAs and physicians or PAs and APNs. It is solely intended to analyze available data and report the differences in actual malpractice incidence, payments and other known outcome markers of safety over a 17 year period.

Autonomy Differences

In order to assess the inherent differences in malpractice risk and liability between physicians, PAs and APNs, one would need to both quantify the differences in autonomy between PAs, APNs and physicians and to account, compare and proportion the variety of medical specialties of each provider group, each having its own inherent risk. These tasks are complex and well beyond the scope of this study. The question of autonomy differences alone is difficult to quantify because the level of autonomy of a PA or APN is determined by multiple factors and may vary greatly not only from one specialty to another but from one employer, employment setting or supervising physician to another. The amount of autonomy of a PA or APN is largely determined by the provider's own confidence and comfort with the level of care being provided. Since these two practitioner types were founded on the principle of extending physician care as much as possible, state regulations have been written broadly to allow physician extenders to push their training, knowledge and skills to its limits. Physicians, rather than envisioning their role as delegating minor tasks or acting as gatekeepers of physician extender practice, have allowed mid-level practitioners to set their own limits of care within the supervising physician's practice specialty. State regulations state simply that PAs may not practice outside the scope of their supervising physician's board specialization. The PA or APN approaches the supervising or collaborating physician for assistance on an as-needed basis.

Autonomy may also vary by employment setting or employer guidelines. For example, some emergency room physician groups require their PAs to discuss or "staff" every patient seen by the PA, while others more commonly prefer that the PA only come to the supervising physician when questions in care arise. Some emergency physicians allow PAs to see any patient in line for service without regard to patient acuity or level of care, while others restrict their PAs to seeing only "minor" emergencies or "urgent care." The difficulty in generalizing or in quantifying the autonomy issue has been an obstacle to research in this area. While there is some limited research on the tasks that PAs perform as compared to physicians, there is no literature on the level of autonomy in performing those tasks or the inherent malpractice risk in performing those tasks.

Additional Limitations and Limitations Summary

Some of the variables studied were reporting requirements in the dataset for physicians but not PAs or APNs. Professional society membership exclusions was one such variable. These variables have been excluded. Finally, a limitation of the study was the inability to differentiate providers into their medical specialties. It compared all physician assistants to all APNs and to all physicians. There may be a greater proportion of physicians or APNs who work in inherently higher risk specialties than PAs. Two such specialties that are more popular among APNs than PAs are anesthesia and midwifery. A more exact comparison would be made by comparing PAs who work in a specific specialty with their APN and physician counterparts who work in that same specialty. This information could not be derived from the dataset. It would make an excellent topic of a future study. However, even if specialty comparisons are made, the varying levels of autonomy and role delineation between APNs, PAs, and physicians must also be addressed.

Chapter Summary

The conceptual framework of Donabedian was chosen because it is the most well accepted and highly regarded model for studying health care quality. Donabedian's model provided a framework where safety was defined as a critical component of health care outcomes. It was argued that practitioner safety is a key component of the process function of the model as a determinant of patient health outcomes, and that all components of the model are interdependent. Patient outcomes rely on the interplay and interdependency of structure and process. Chapter III reiterated the rationale for the study and explained how the study builds upon the very limited earlier work on practitioner safety conducted in the 1990s. The current study is an updated exploration of the earlier work and is significant not only because it was based on ten additional years of data, but also because it compared additional variables that the earlier studies could not, providing richer analysis and opportunities for further research. The research design was an analysis of variables using either chi square or ANOVA as appropriate to determine whether statistically significant differences existed between safety outcome measures of three medical provider groups. The NPDB data source, the sample, and rational for the demographic data used were also explained in Chapter III. Limitations of the dataset, a reiteration of the limitations of the study, and a reiteration of the purpose of the study was also provided.

Chapter IV, the next section, presents the analysis of the data with careful consideration to study limitations. Chapter V discusses and summarizes the findings, answers the study questions, makes recommendations to educational leaders, health care policymakers, to the PA profession and its training programs and suggests further research.

CHAPTER IV

RESULTS OF DATA ANALYSIS

Introduction

Chapter IV consists of study analyses in written, table, and figure format. The reader is encouraged to examine the data tables and figures and to draw his/her own conclusions from the table and figure presentation of results. In interpreting the analysis, the reader is cautioned to bear in mind that the liability and risk of the three provider groups is different because each group provides care that varies in complexity and risk of poor outcome. Discussion of results, unexpected findings, further limitations, conclusions and recommendations will be reserved and presented in Chapter V.

Results of Analysis

Spanning January 1, 1991 - December 31, 2007, the NPDB recorded 324,285 total entries of malpractice payments and adverse actions for PAs, APNs and physicians. Of these, 249,097 were malpractice payments and 75,188 were adverse actions (Table 6). Global results demonstrated that statistically significant associations existed between provider groups for total entries, malpractice payments and most adverse actions. Therefore, the null hypotheses that no significant associations existed between these groups are rejected. The number of physician reports was 320,034 while the number of PA reports was 1,535 and APN reports 2,715. Broken down into malpractice payments versus adverse actions, the number of malpractice payments and adverse actions were respectively 245,267, and 74,767 for physicians, 1,222 and 314 for PAs, 2,608 and 107 for APNs.

Table 6. *National Practitioner Data Bank Entries by Provider Type (1/01/1991 - 12/31/2007)*

Type of Provider	Total Entries	Malpractice Payments	Adverse Actions
Physician	320,034	245,267	74,767
PA	1,536	1,222	314
APN	2,715	2,608	107
TOTAL	324,285	249,097	75,188

Note: Total entries: $\chi^2 = 576.67$; df =2; p< 0.0001; effective sample size n= 324,285.
Malpractice Payment field RECTYPE M & P: $\chi^2 = 181.36$; df =2; p< 0.0001.
Adverse action field RECTYPE A & C: $\chi^2 = 565.66$; df =2; p< 0.0001.

Table 7 displays the number of payment reports, providers involved, and ratio of providers per report. The number of providers involved is higher than the number of malpractice payments because multiple providers may be involved in some payments. For example, a physician and PA or physician and APN could be involved in the same payment. Physicians had 1.10 reports per provider, PAs had 1.24 reports per provider and APNs had 1.26 providers than reports. This means that 10%, 24% and 26% of each provider group respectively had another provider involved in the malpractice payment.

Table 7. *Number of Payment Reports, Providers, and Average Number of Providers per Report*

Provider	Number of Payment Reports	Average Number of Providers per Report	Number of Providers Involved
Physician	245,267	1.10	268,919
PA	1,222	1.24	1,509
APN	2,608	1.26	3,265

Note: χ^2 = 1395.82; df =6; p< 0.0001; effective sample size n=326,671. Number of Providers Involved field = NUMBPRSN. There maybe more than one provider type involved with some malpractice payments.

Table 8 displays the average age of the provider at time of event leading to the report. For malpractice payments, the average age of physicians, PAs, and APNs were 43 (±11), 37 (±9), and 41 (±11) years, respectively. Scheffe's method of one-way ANOVA for mean comparisons among three types of health care providers revealed statistically significant differences in mean age at the time of the event leading to report between physicians and PAs, physicians and APNs, as well as PAs and APNs (F=280.19 and p<0.0001, df=2).

For adverse action reports, the average age of physicians, PAs, and APNs at the time of adverse action leading to report was 48 (±11), 41(±9), and 43 (±9) years, respectively. By using the Scheffe's method of one-way ANOVA for mean comparisons among three types of health care providers, statistically significant differences were found in mean age at the time of the adverse action leading to report between physicians and PAs, physicians and APNs (F=65.44 and p<0.0001, df=2), but no significant difference was found between PAs and APNs at p-value <0.05. PAs and APNs were statistically significantly younger than physicians for malpractice reports but not between themselves.

Table 8. *Average Age (in years) of Provider at the Time of the Event Leading to the Report*

Provider	Adverse Action*	Malpractice‡
Physician	48 (±11)	43 (±11)
PA	41 (± 9)	37 (± 9)
APN	43 (± 9)	41 (± 9)

Note: For physician to PA and physician to APN: Adverse action: F= 65.44; p<0.0001; df=2; Number of observations used n= 74,862; Malpractice: F= 280.19; p<0.0001; df=2; n= 247,924. For PA to APN: p<0.05 for both adverse actions and malpractice. ± = Standard Deviation.

Table 9 displays medical practice payment by type of provider and average year in practice. This was determined by subtracting the year of graduation from the year of the malpractice payment. The average number of years in practice at the time the malpractice payment report was 25.2 (± 13.1) for physicians, 15.1 (± 8.5) for PAs, and 18.7 (± 10.5) for APNs. Scheffe's method of one-way ANOVA revealed statistically significant differences in mean age at the time of the event leading to report between physicians and PAs, physicians and APNs, and PAs and APNs (F=678.28 and p<0.0001). On average PAs and APNs made malpractice payments earlier in their careers than physicians.

Table 9. *Medical Malpractice Payment by Type of Provider and Average Year of Practice (1991-2007)*

Provider	Year of Practice (± SD)
Physician	25.2 (±13.1)
PA	15.1 (± 8.5)
APN	18.7 (±10.5)

Note: ANOVA (Scheffe) F= 678.28; p<0.0001; df=2; n= 248,246. SD = Standard Deviation.

Table 10 reports malpractice claims for the period 1/31/2004 - 12/31/2007 by patient's age and gender stratified by health care providers. Data for other years was not available. There were 47,457 patients involved in malpractice payments by physicians, including 26,483 females (55.8%) and 20,974 males (44.2%). Physician assistants and advanced practice nurses were involved with less than 2% of patients relating to malpractice payments. For PAs, 203 (47.7%) female patients and 223 (52.3%) male patients were involved in malpractice payment reports. For APNs. 536 (59.2%) female patients and 369 (40.8%) male patients involved in malpractice payment reports. The chi-square test revealed a significant association between patient's age and gender with the type of care providers (p<0.0001 for each provider). For all provider types the total number of females involved was 27,322 or 56% of the total.

Table 10. *Malpractice Claims (2004-2007) by Patients' Age and Gender*

Age Group	Physician	PA	APN	Total
Fetus				
Male	609	1	25	635
Female	438	1	25	464
Under 1 Year				
Male	1,868	2	92	1962
Female	1,264	5	71	1340
1-9 Years				
Male	745	4	25	774
Female	619	12	15	646
10-19 Years				
Male	1,062	14	18	1094
Female	993	14	26	1033
20-29 Years				
Male	1,294	16	21	1331
Female	2,829	23	71	2923
30-39 Years				
Male	2,616	29	24	2669
Female	5,180	32	105	5317
40-49 Years				
Male	3,831	55	46	3932
Female	5,365	49	67	5481
50-59 Years				
Male	3,985	45	48	4078
Female	4,357	28	69	4454
60-69 Years				
Male	2,834	36	37	2907
Female	2,842	15	41	2898
70-79 Years				
Male	1,688	18	23	1729
Female	1,865	11	28	1904
80 and Over				
Male	442	3	10	455
Female	731	13	18	762
TOTAL	47,457	426	907	48788
Total Male	20,974	223	369	21,566
Total Female	26,483	203	536	27,222

Note: For Physicians: $\chi^2 = 1309.10$; df =11; p< 0.0001; effective sample size n=47,457.
For Physician Assistants: $\chi^2 = 26.85$; df =11; p< 0.0048; effective sample size n=426.
For APN: $\chi^2 = 67.29$; df =11; p< 0.0001; effective sample size n=905.

Table 11 reports medical malpractice payments by reason for payment and provider type. This table is useful in demonstrating the main reasons for malpractice payments. The top five reasons for malpractice payments among physicians were diagnosis (33.9%), surgery (27.1%), treatment (18.0%), obstetrics (8.6%), and medication related (5.5%). The top five reasons among PAs were diagnosis (55.5%), treatment (24.6%), medication related (8.5%), surgery (4.6%), and miscellaneous (3.1%). For APNs, the top five reasons for payments were anesthesia (38.7%), obstetrics (22.2%), diagnosis (14.8%), treatment (10.5%), and medication related (4.8%). The chi-square test indicated a significant association between reasons for malpractice payment and type of health care provider (χ^2 =11525.38 and $p<0.0001$). Table 12 displays a ranking of the eight major reasons for payment by provider type.

Table 11. *Medical Malpractice Payments by Reason for Payment and Provider Type (2004-2007)*

Reason for Payment	Total	Physician	PA	APN
Diagnosis	84,193	83,130	678	385
Surgery	66,605	66,451	56	98
Treatment	44,603	44,028	301	274
Obstetrics	21,700	21,114	8	578
Medication	13,676	13,446	104	126
Anesthesia	8,611	7,592	10	1,009
Monitoring	3,859	3,757	22	80
Miscellaneous	3,663	3,600	38	25
Equipment/Product	980	966	2	12
IV and Blood Products	858	839	3	16
Behavioral Health	235	230	0	5
TOTAL	248,983	245,153	1,222	2,608

Note: χ^2 = 11,525.38; df =20; p< 0.0001; effective sample size n=248,983.

Table 12. *Top Medical Malpractice Reasons for Payment by Provider Type*

Rank	Physicians	PAs	APNs
1	Diagnosis	Diagnosis	Anesthesia
2	Surgery	Treatment	Obstetrics
3	Treatment	Medication	Diagnosis
4	Obstetrics	Surgery	Treatment
5	Medication	Miscellaneous	Medication
6	Anesthesia	Monitoring	Surgery
7	Monitoring	Anesthesia	Monitoring
8	Miscellaneous	Obstetrics	Miscellaneous

Table 13 reveals medication-related medical malpractice payments by reason for payment for the data dates available, January 1, 2004 – December 31, 2007. The most common type of medication errors were the same for all three provider types. In order of frequency these were: a) improper management of medication regimen, and b) improper technique. Other common errors were failure to order appropriate medication, wrong medication ordered, wrong dosage of the correct medication and consent issues. Administration of medication errors was proportionately higher for PAs and APNs.

Table 13. *Medication-Related Medical Malpractice Payments by Reason for Payment and Provider Type (2004-2007)*

Malpractice Type	Physician	PA	APN
Improper management of medication regimen	18,687	58	203
Improper technique	8,060	55	139
Consent issues	3,133	6	15
Failure to order appropriate medication	1,394	7	9
Wrong medication ordered	1,047	14	11
Wrong dosage ordered of correct medication	1,014	12	15
Failure to instruct on medication	848	10	13
Wrong medication administered	611	17	23
Wrong dosage administered	555	3	14
Failure to medicate	440	6	4
Wrong route	72	0	1
Wrong patient	29	0	0
TOTAL	35,890	188	447

Note: χ^2 = 7,097.77; df =178 ; p< 0.0001; effective sample size n=248,983.

Table 14 displays the average duration between litigation and payment for medical malpractice payments between January 1, 1991 and December 31, 2006. Table 14 revealed an average duration between these events of 4.1 years for physicians, 3.6 years for PAs and 3.8 years for APNs. The average duration for all three provider types was 3.9 years.

Table 14. *Duration from Litigation to Payment*

Provider Type	Average Duration in Years (SD)
Physicians	4.1 (2.2)
PAs	3.6 (1.9)
APNs	3.8 (2.1)

Note: ANOVA (Scheffe) F= 61.69; p<0.0001; df=2; n= 181,128. SD=Standard deviation

Table 15 displays the mean and median payment for malpractice reports by gender for the full 17 year study period in 2008 dollars. These data were provided separately by the NPDB staff and is not part of the public use data file. The data demonstrated that female providers, regardless of type of provider, had larger malpractice payments on average than male providers. Female providers also had higher median malpractice payments for physicians and APNs. Median malpractice payment was slightly lower for PAs. Both the average and median payments for female practitioners was higher than that for males when provider types are combined.

Table 15. *Mean and Median Malpractice Payment by Gender for 1999-2007**

	Mean		Median	
	Male	Female	Male	Female
Physicians	302,659	365,146	160,553	183,489
PAs	204,373	218,701	104,250	97,479
APNs	336,404	383,707	143,351	182,342
AVERAGE	281,146	322,184	136,055	154,437

**Note*. Data provided by Robert E. Oshel, Ph.D., Associate Director for Research and Disputes, Division of Practitioner Data Banks, U.S. Health Resources and Services Administration; April 1, 2008, adjusted for inflation to 2008 dollars using the CPI provided by the U.S. BLS. Statistical values are not available.

Table 16 and Figures 4-15 display malpractice reports and adverse action reports by year for all three provider groups as well as the percent change in reports by year from 1991-2007. While percent change is useful, given the small numbers of PA and APN reports compared to physicians, both percent and absolute number changes were reported. The year with the largest number of physician malpractice reports was 2001. Physician malpractice reports remained fairly consistent between 1991 and 2005 and then saw a decrease in 2006 and 2007. The physician malpractice reports were also noted to be on a steady downward sloping from 2003-2007. The number of PA malpractice reports saw a continual increase peaking at 135 in 2004 with a jump from 81 in 2001 to 123 in 2002. PA reports have decreased from 2004 to 2007. The number of APN malpractice reports was fairly consistent from 1991 to 2000 hovering between 90 and 140 but then saw a large increase from 111 in 2000 to 183 in 2001 and increases again in 2004, 2005, and 2006 (from 168 in 2003 to 264 in 2006). The largest percent change in malpractice reports for physicians was a decrease in 1995 of 11.4%, for PAs was an increase in 2002 of 51.1% and

for APNs an increase in 2001 of 61.3%. The comparison in physician malpractice reports between 1991 and 2007 was a decrease of 1900 reports or 14.2%. The average number of reports for the 17 year period was 14,512. The comparison of PA malpractice reports between 1991 and 2007 was an increase of 80 and the average number of reports over the period was 72. The comparison in APN reports between 1991 and 2007 was an increase of 137 and the average number of reports for the period was 153.

The year with the largest number of physician adverse action reports was 1998 with 4971 reports. Physician adverse action reports were fairly consistent between 1991 and 2007 with an overall flat slope. The number of PA adverse action reports was fairy inconsistent but did show an overall upward slope peaking in 2003 with an overall decrease from 2003 to 2007. The number of APN adverse action reports saw low numbers of one to seven reports from 1991 to 2002 but then a large increase in 2003 and 2004 with a peak of 21 in 2004. The APN reports increased from 5 in 2002 to 21 in 2004. The number decreased in 2005, 2006 and 2007. The largest percent change in adverse action reports for physicians was a decrease in 2006 of 10.8%, for PAs was an increase in 1997 of 175% and for APNs an increase in 2001 of 133% followed by increases in 2003 of 120% and 2004 of 90%. The total change in physician adverse action reports from 1991 to 2007 was an increase of 235 reports or 6.7% and the average number of reports was 4,315. The total change in PA adverse action reports from 1991 to 2007 was an increase from 6 to 14 or 133% and the average number of reports for the period was 18. The total change in APN reports from 1991 to 2007 was an increase of 1 to 8 or 700% and the average number of reports was 106.

Table 16. *Number of Malpractice Payments and Adverse Actions Total and by Year, 1991-1999*

Report Year	Provider	Malpractice Payment Reports*	Change %	Adverse Action Reports†	Change %
1991	Total	13522	0	3487	0
	Physicians	13399	0	3480	0
	PAs	14	0	6	0
	APNs	109	0	1	0
1992	Total	14839	9.7	3570	2.4
	Physicians	14692	9.6	3549	2.0
	PAs	30	114.3	16	166.7
	APNs	117	7.3	5	400.0
1993	Total	14771	-0.5	3910	9.5
	Physicians	14629	-0.4	3896	9.8
	PAs	33	10.0	11	-31.3
	APNs	109	-6.8	3	-40.0
1994	Total	15258	3.3	4293	9.8
	Physicians	15124	3.4	4266	9.5
	PAs	44	33.3	24	118.2
	APNs	90	-17.4	3	0.0
1995	Total	14120	-8.1-	4692	9.3
	Physicians	13988	-7.5	4676	9.6
	PAs	39	-11.4	12	5.0
	APNs	93	3.3	4	33.3
1996	Total	15336	8.6	4882	4.0
	Physicians	15186	8.6	4873	4.2
	PAs	44	12.8	8	-33.3
	APNs	106	14.0	1	-75
1997	Total	14696	-4.2	4920	0.8
	Physicians	14531	-4.3	4892	0.4
	PAs	46	4.5	22	175
	APNs	119	12.3	6	500
1998	Total	14103	-4.0	4998	1.6
	Physicians	13944	-4.0	4971	1.6
	PAs	49	6.5	22	0.0
	APNs	110	-7.6	5	-16.7
1999	Total	15151	7.4	4742	-5.1
	Physicians	14945	7.2	4720	-5.0
	PAs	75	53.1	20	-9.1
	APNs	131	19.1	2	-60

Table 16. (*continued*)

Report Year	Provider	Malpractice Payment Reports*	Change %	Adverse Action Reports†	Change %
2000	Total	15631	3.2	4300	-9.3
	Physicians	15447	3.4	4274	-10.0
	PAs	73	-2.7	23	15.0
	APNs	111	-15.3	3	50.0
2001	Total	16831	7.7	4504	4.7
	Physicians	16571	7.3	4471	4.6
	PAs	81	11.0	26	13.0
	APNs	179	61.3	7	133.3
2002	Total	15506	-7.9	4278	-5.0
	Physicians	15200	-8.3	4251	-4.9
	PAs	123	51.1	22	-15.4
	APNs	183	2.2	5	-28.6
2003	Total	15520	0.9	4376	2.2
	Physicians	15233	0.2	4338	2.0
	PAs	119	-3.3	27	22.7
	APNs	168	-8.2	11	120.0
2004	Total	14722	-5.1	4484	2.5
	Physicians	14373	-5.6	4440	2.4
	PAs	135	13.4	23	-14.8
	APNs	214	27.4	21	90.1
2005	Total	14380	-8.4	4342	-3.2
	Physicians	14011	-2.5	4319	-2.7
	PAs	110	-18.5	12	-47.8
	APNs	259	21.0	11	-47.6
2006	Total	12872	-10.0	4240	-2.3
	Physicians	12495	-10.8	4210	-2.5
	PAs	113	2.7	20	66.7
	APNs	264	1.9	10	-9.1
2007	Total	11,839	-8.0	3744	-11.7
	Physicians	11,499	-8.0	3722	-11.6
	PAs	94	-16.8	14	-30.0
	APNs	246	-6.8	8	-20.0

Note: * For Malpractice: $\chi^2 = 899.76$; df =32; p< 0.0001; effective sample size n=249,097.
† For Adverse Action: $\chi^2 = 97.85$; df =32; p= 0.0002; effective sample size n=74,117.

Figure 4. *Physician Malpractice Payment Reports 1991-2007*

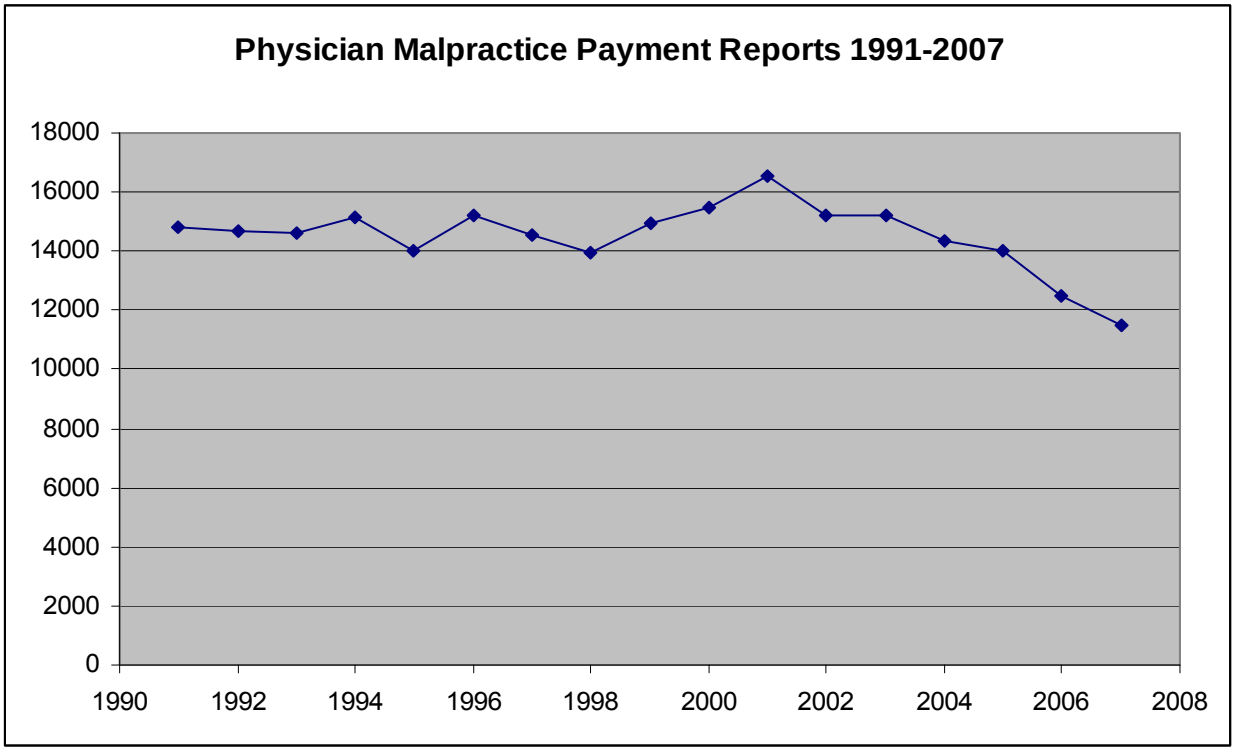

Figure 5. *PA Malpractice Payment Reports 1991-2007*

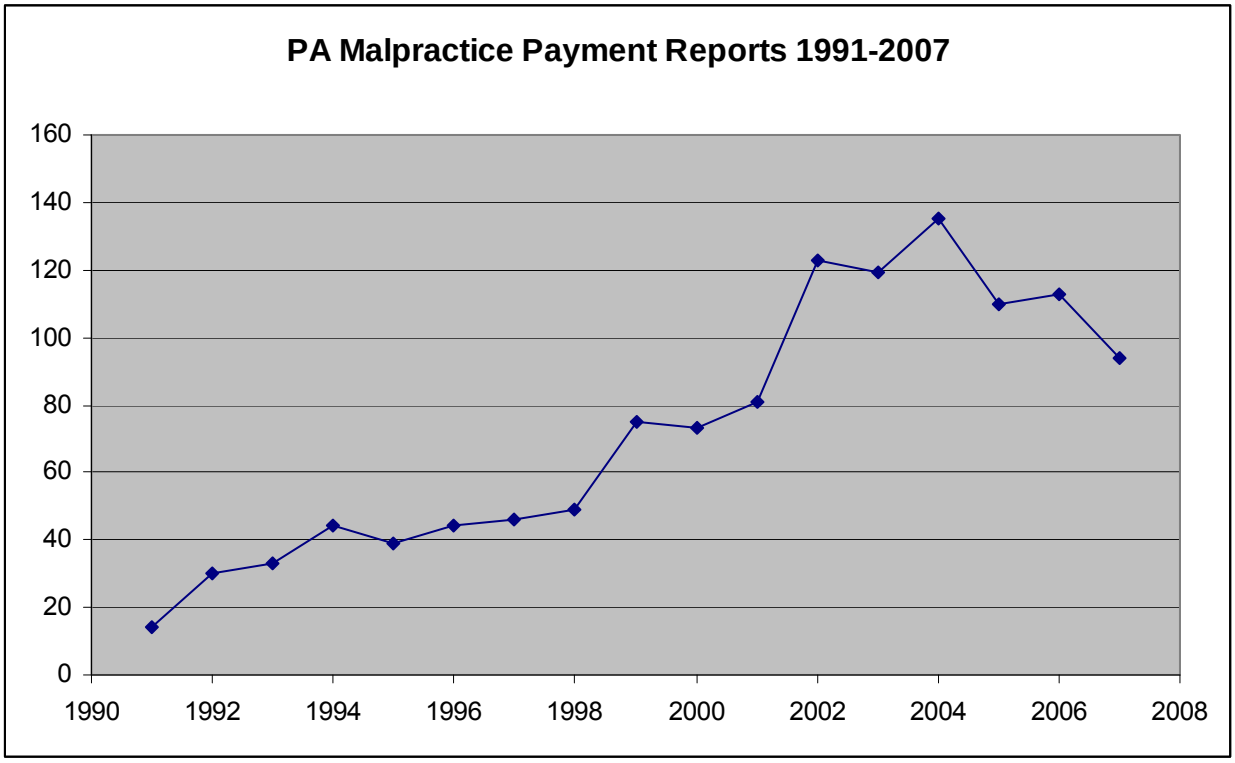

Figure 6. *APN Malpractice Payment Reports 1991-2007*

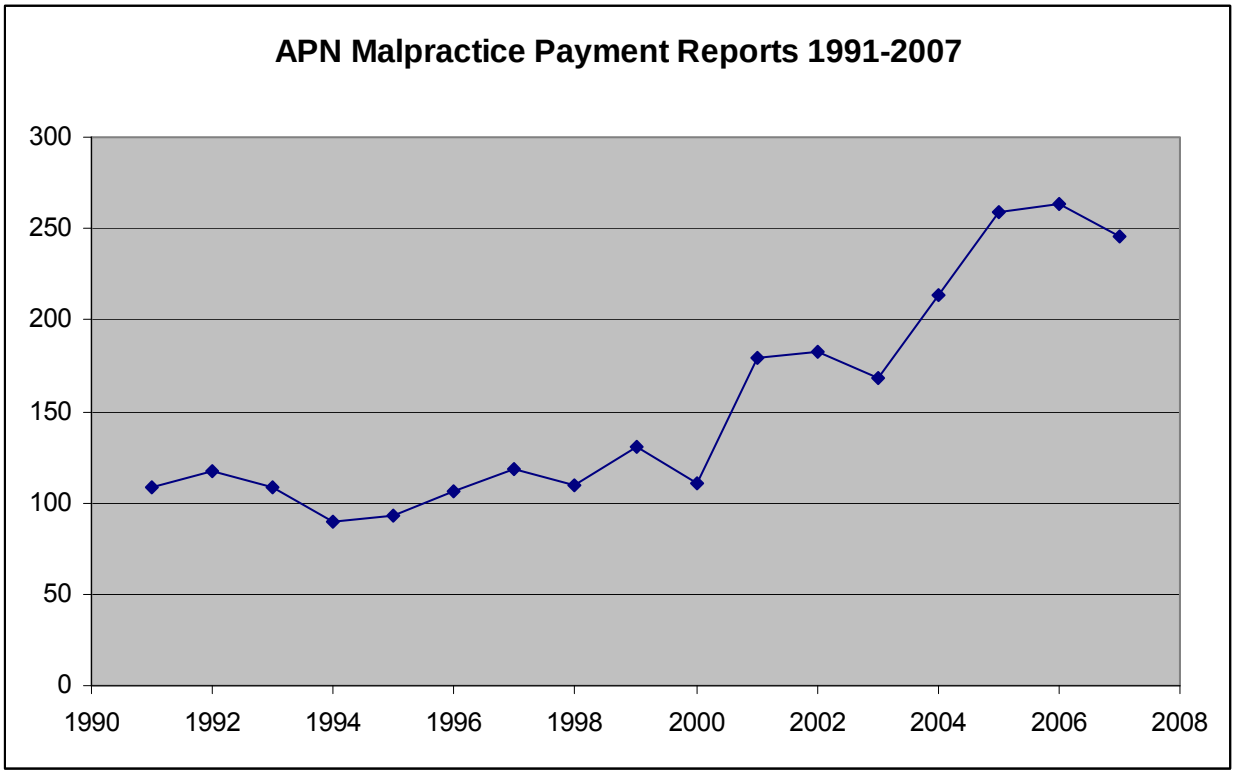

Figure 7. *Total Malpractice Payment Reports 1991-2007*

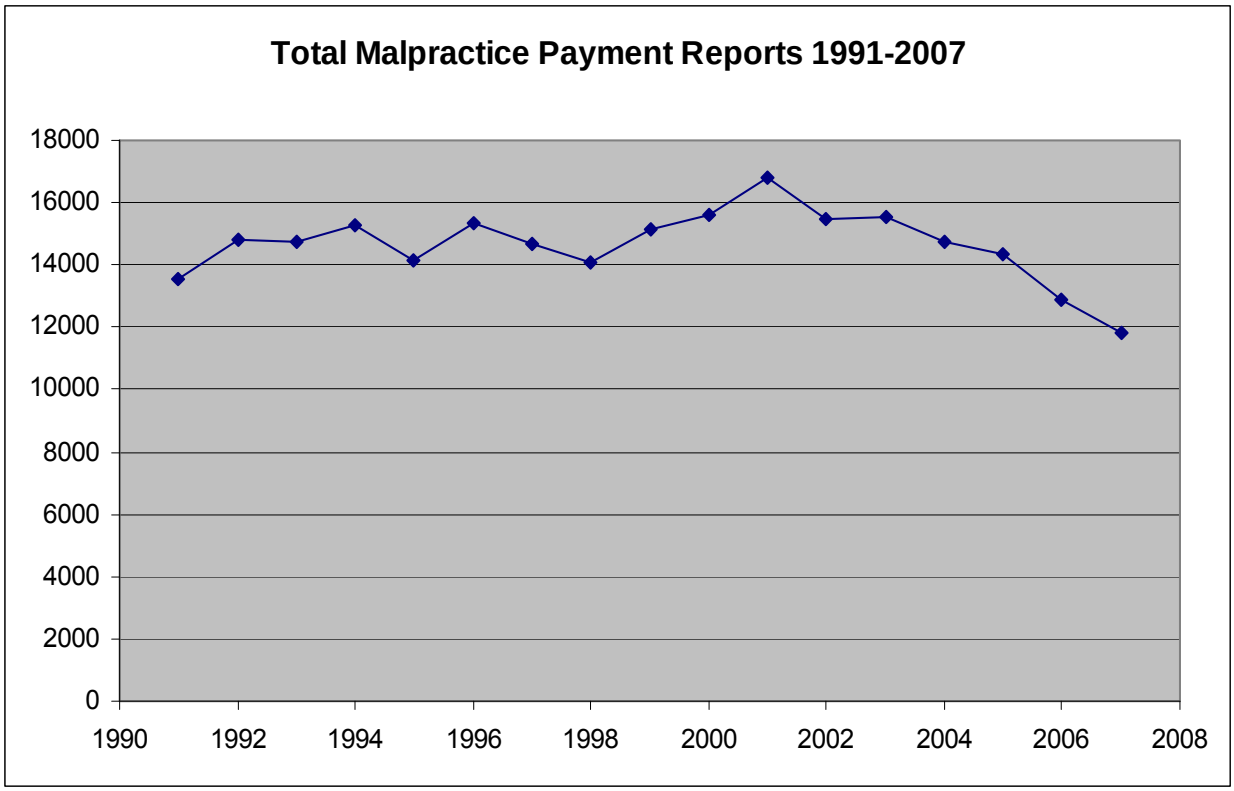

Figure 8. *Total Malpractice Payments By Provider Type 1991-2007*

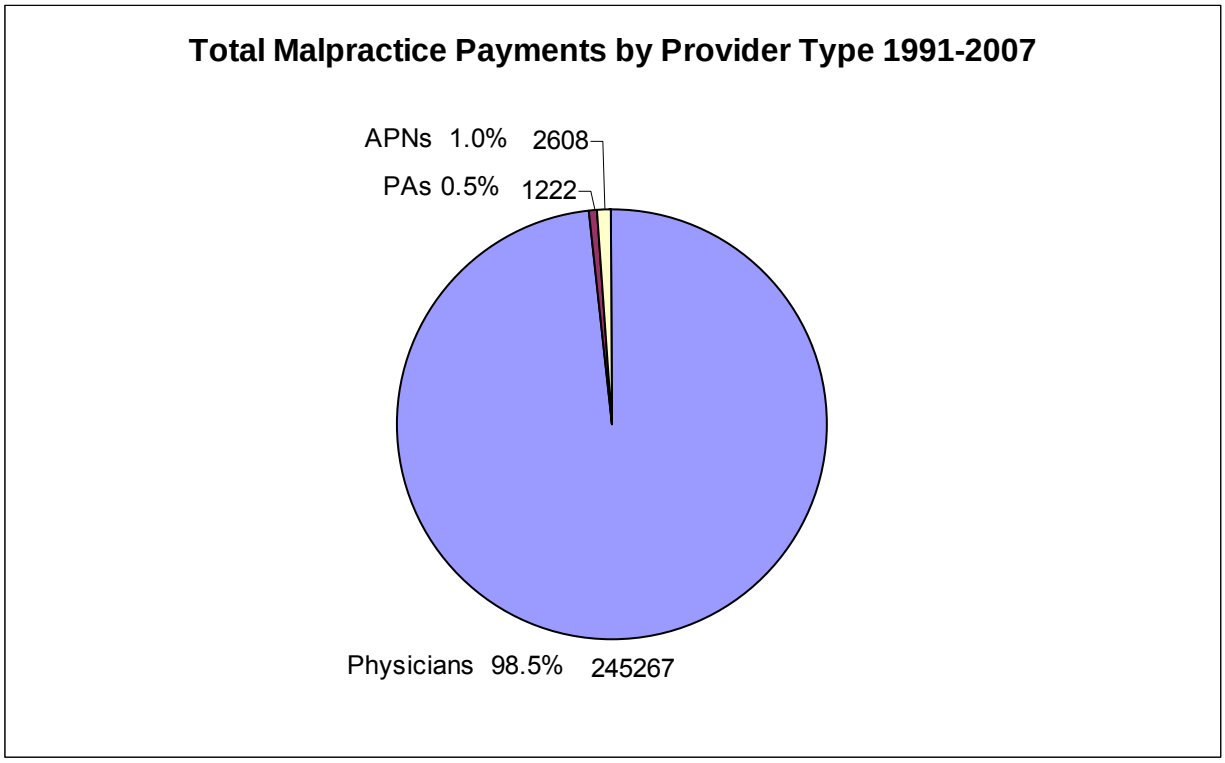

Figure 9. *Average Annual Malpractice Payments by Provider Type 1991-2007*

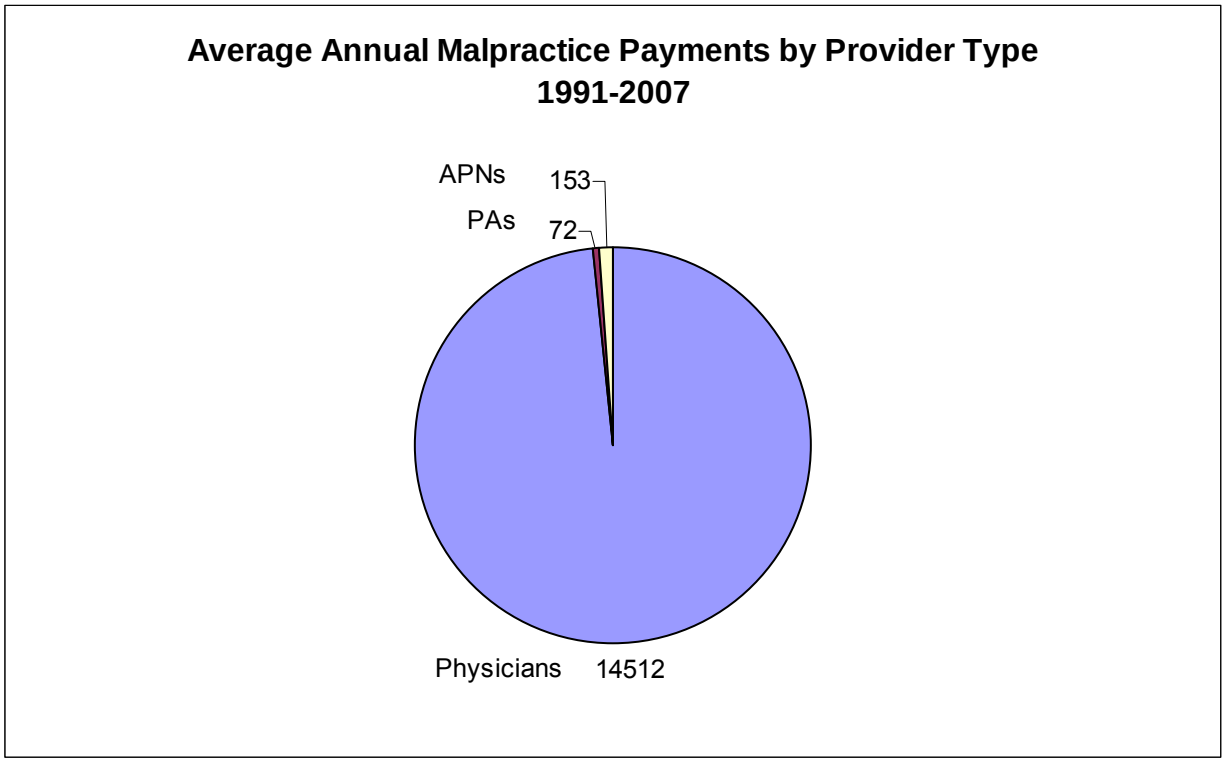

Figure 10. *Physician Adverse Action Reports 1991-2007*

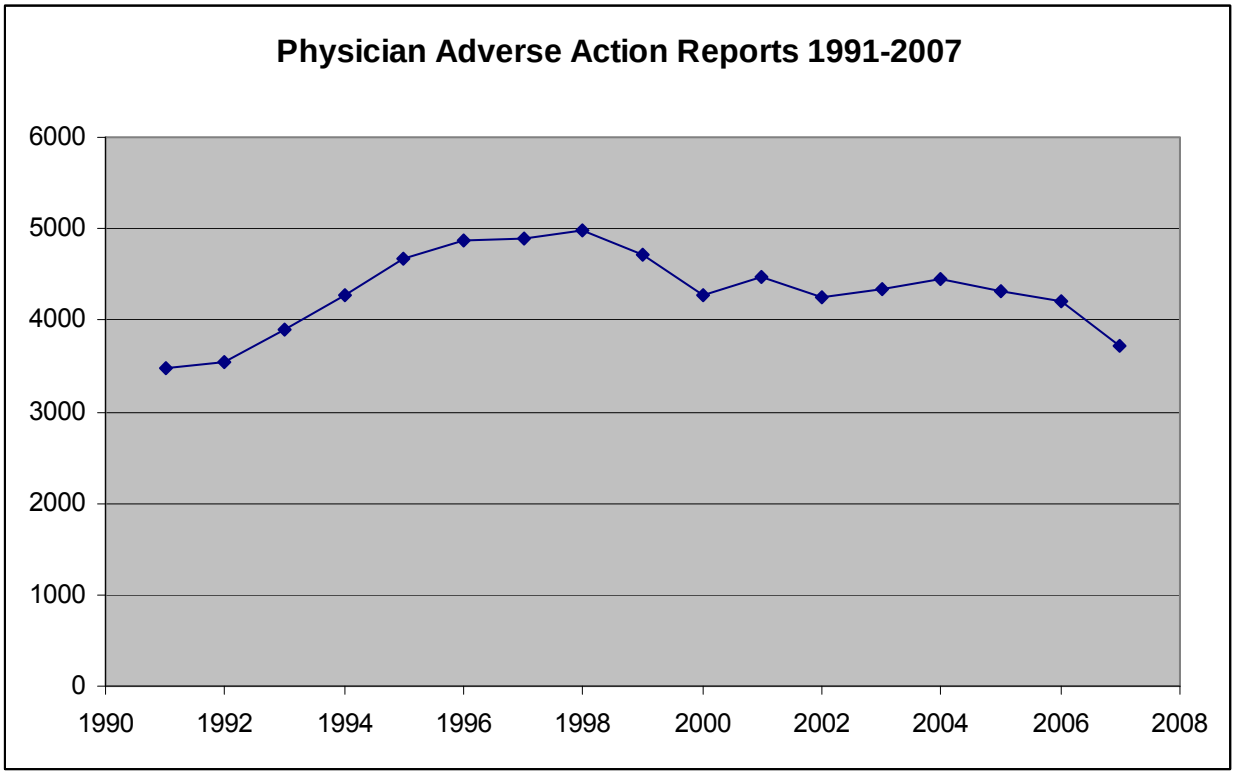

Figure 11. *PA Adverse Action Reports 1991-2007*

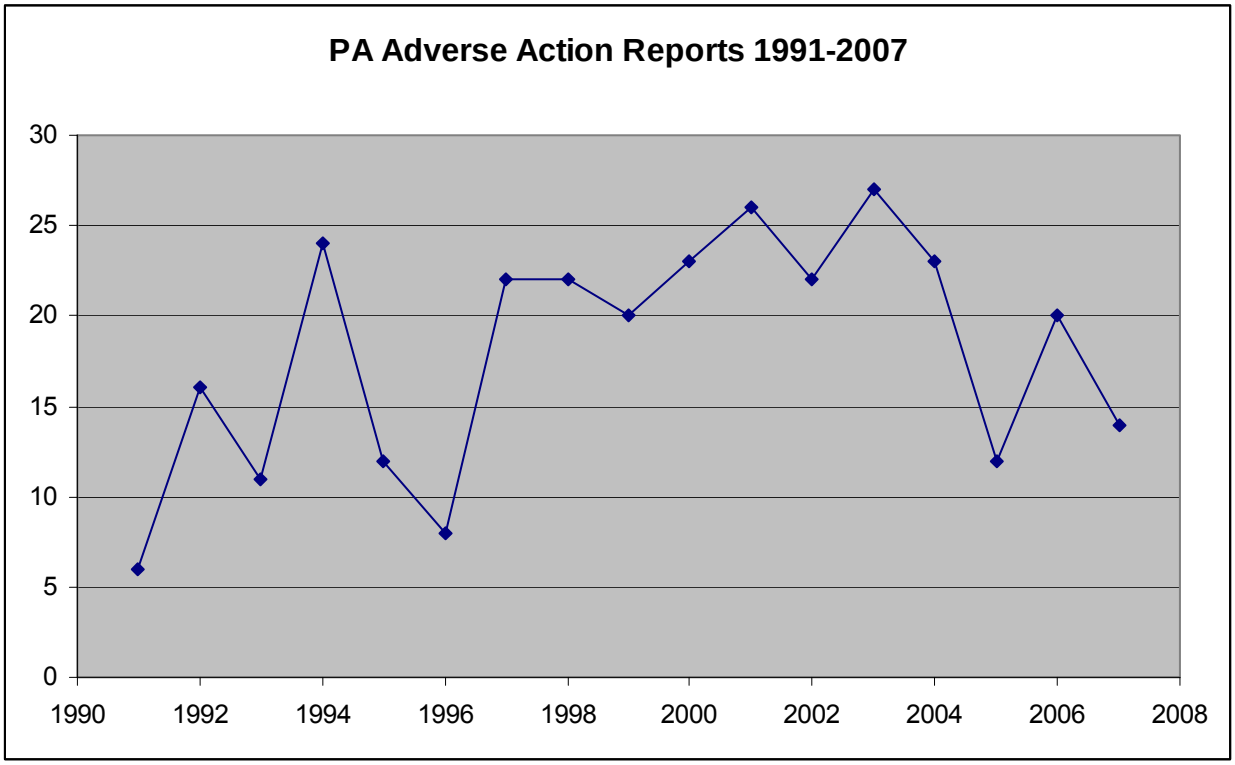

Figure 12. *APN Adverse Action Reports 1991-2007*

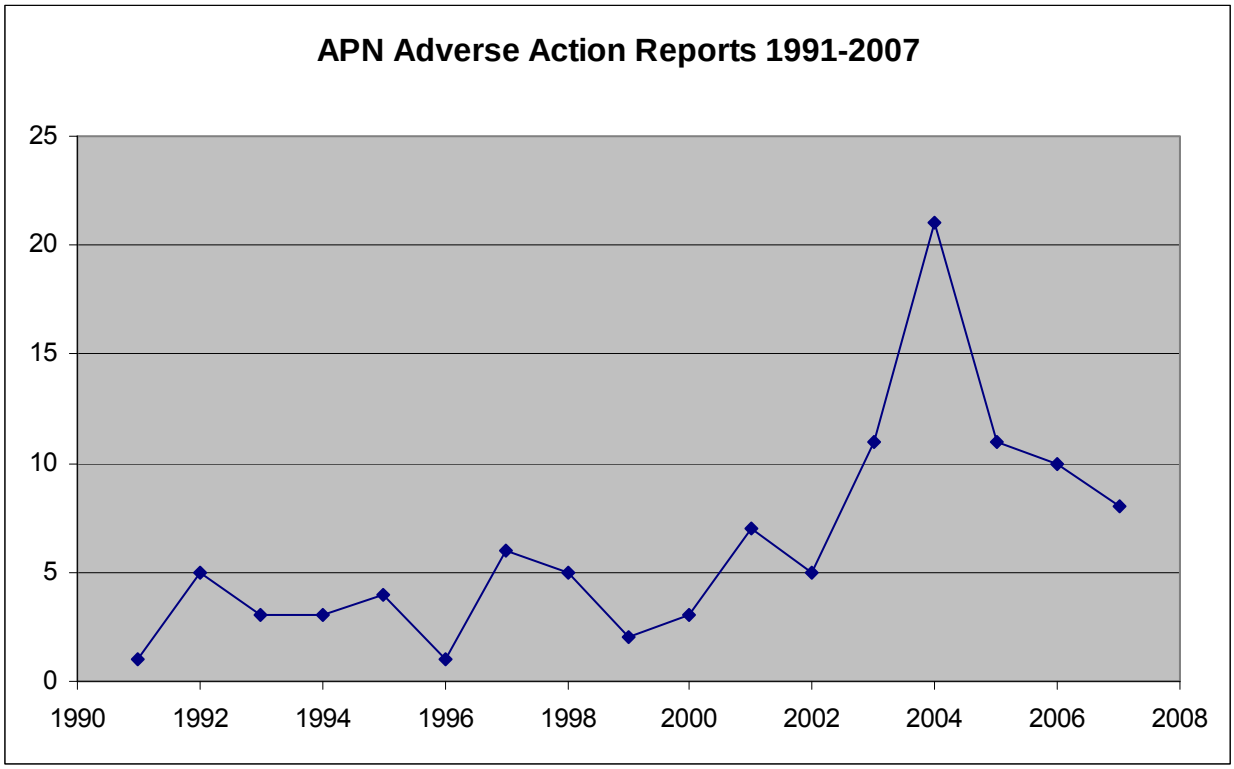

Figure 13. *Total Adverse Action Reports 1991-2007*

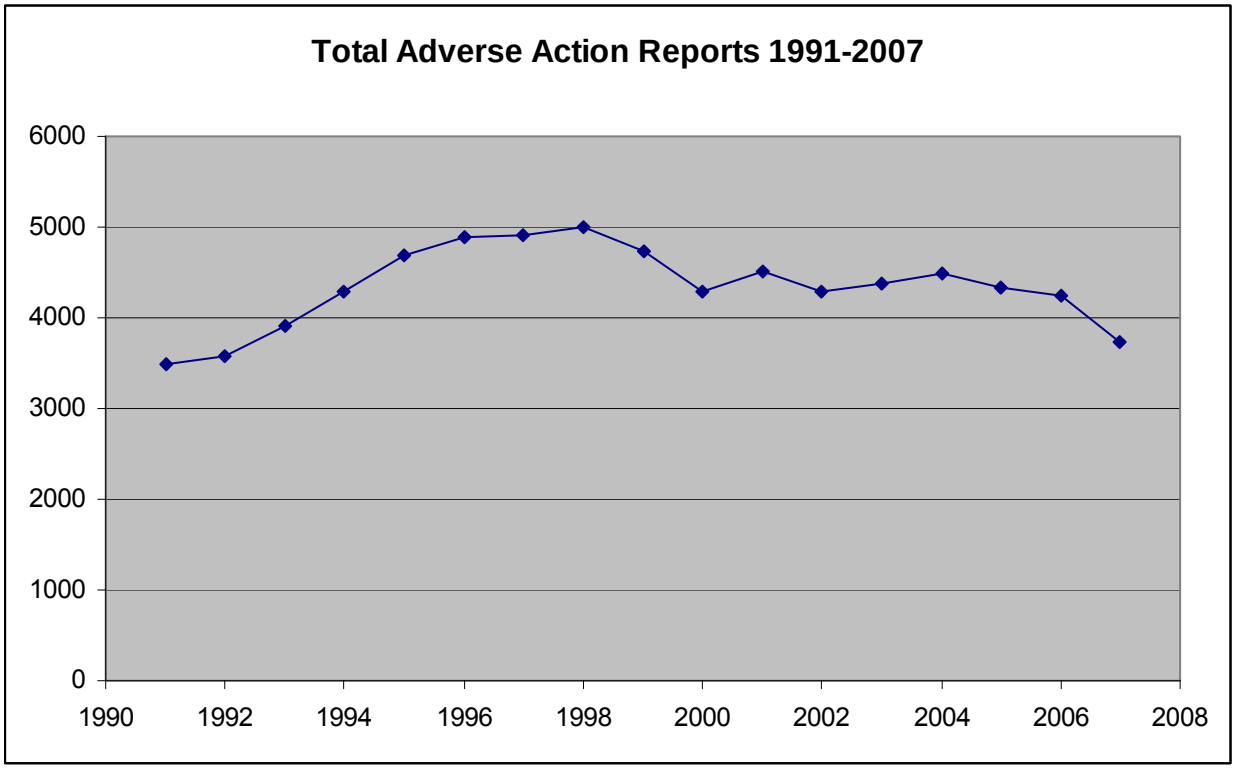

Figure 14. *Total Adverse Action Reports by Provider Type 1991-2007*

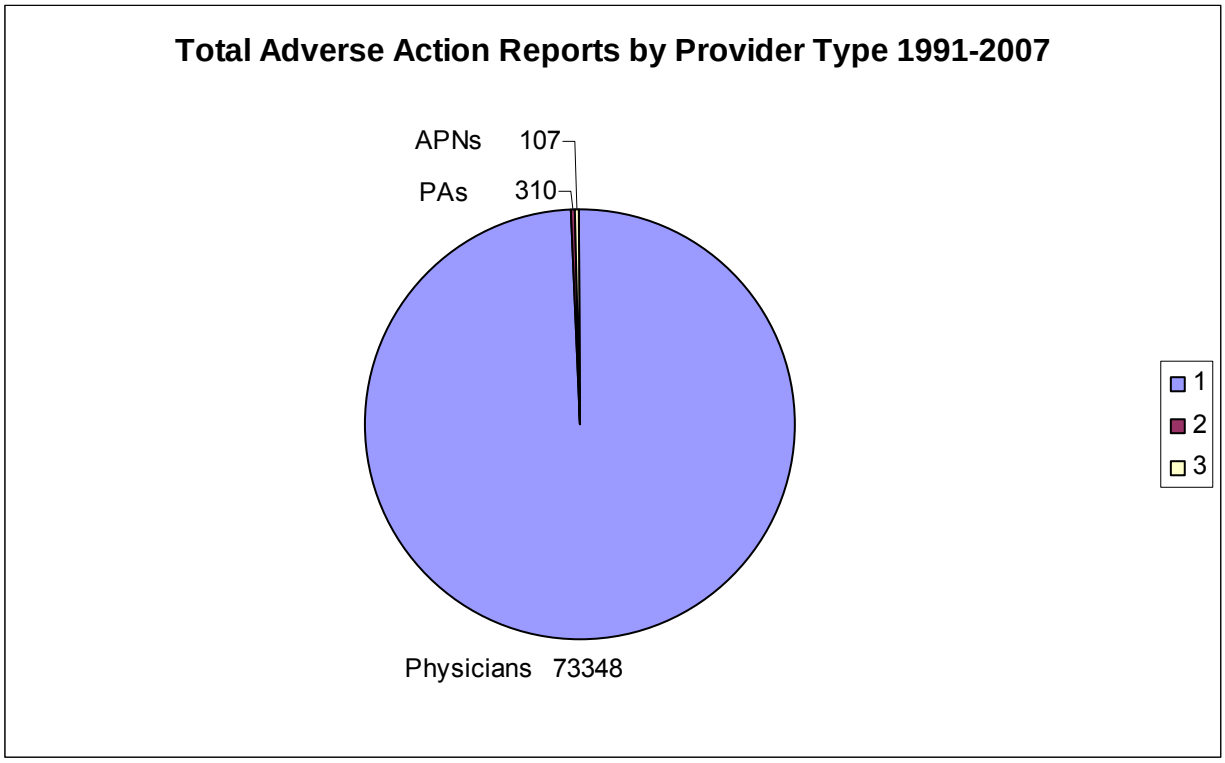

Figure 15. *Average Annual Adverse Action Reports by Provider Type 1991-2007*

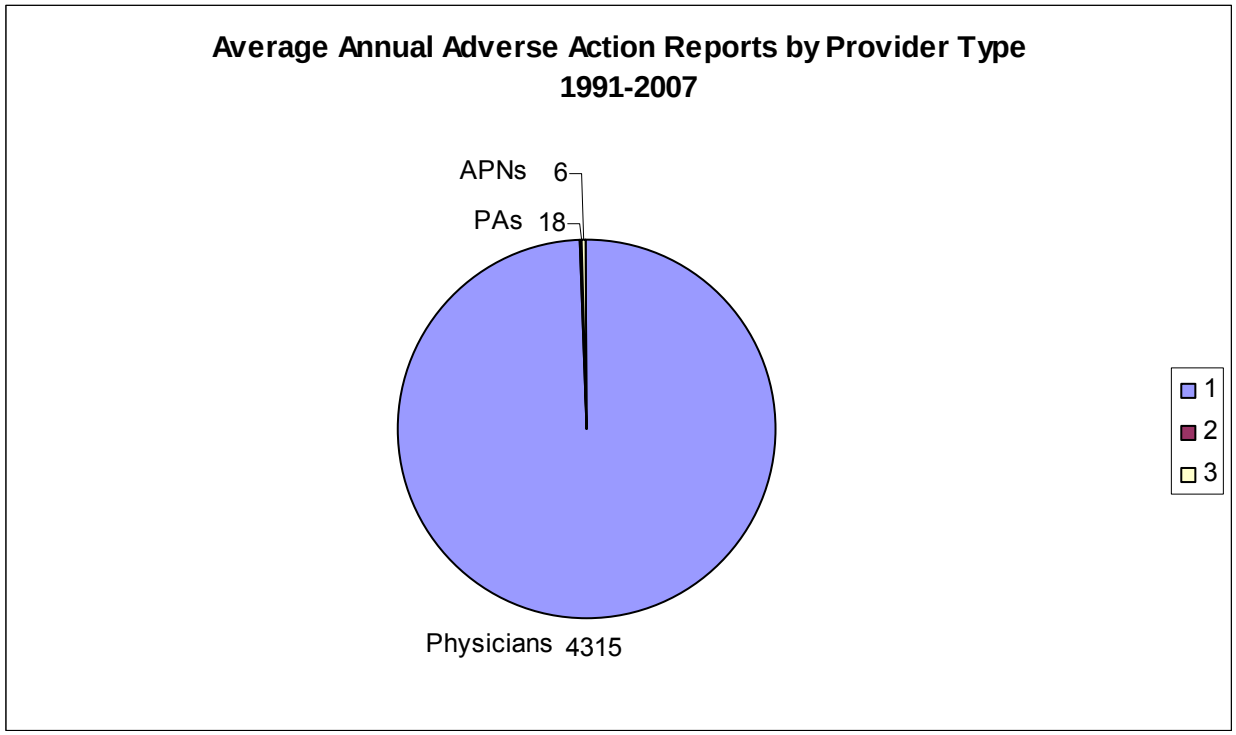

Table 17 displays the number of malpractice payments and adverse actions by state of practice (work state) for the period 1991-2007. The table is sorted by physician malpractice payment rank. The states with the highest number of malpractice reports for physicians were those with the largest populations and number of physicians: New York, California, Pennsylvania, Florida and Texas. The number of adverse action reports however, was not as connected to population. The states with the highest number of adverse actions in order of frequency were California, Texas, Ohio, Florida, and New York. Pennsylvania ranked much lower in its number of adverse actions even though it had the third highest number of malpractice payments.

The states with the highest number of malpractice payments for PAs were New York, Florida, Texas, California, Michigan and North Carolina while for APNs those states were

Florida, Texas, New York, Pennsylvania and California. The states with the highest number of adverse action reports against PAs were New York and North Carolina while for APNs were Texas and Florida.

Table 17. *Number of Malpractice Payments and Adverse Actions by Work State, 1991-2007*

Work State	Malpractice Reports*			Adverse Action Reports†		
	Physician	PA	APN	Physician	PA	APN
New York	30951	161	181	2649	13	4
California	24158	76	100	7506	5	7
Pennsylvania	20274	32	113	1496	3	6
Florida	16639	109	289	2871	3	10
Texas	16381	77	194	3612	6	11
Michigan	11773	73	80	1843	2	4
New Jersey	9546	4	48	1716	0	3
Ohio	9492	7	79	3296	0	3
Illinois	9303	6	42	1615	0	0
Indiana	4571	0	12	649	0	1
Louisiana	4571	10	83	1047	3	2
Massachusetts	4466	23	72	1579	0	0
Georgia	4285	43	75	1625	3	2
Missouri	4284	8	49	1101	2	2
Arizona	3808	53	50	2085	2	4
Maryland	3755	15	63	1277	0	2
Washington	3601	46	43	984	4	5
North Carolina	3544	61	34	959	10	4
Virginia	3257	11	42	1601	0	5
Tennessee	2859	15	73	798	0	3
Kentucky	2673	6	37	1224	3	0
Puerto Rico	2656	0	1	26	0	0
Connecticut	2548	8	18	588	0	1
Colorado	2497	32	49	1413	1	2
Kansas	2352	14	38	619	1	2
South Carolina	2120	11	21	760	1	1
West Virginia	2110	5	13	802	0	0
Oklahoma	1945	13	40	1067	3	0
Iowa	1831	17	22	637	0	0
Mississippi	1820	3	26	566	1	0

Table 17. (*continued*)

Work State	Malpractice Reports*			Adverse Action Reports†		
	Physician	PA	APN	Physician	PA	APN
Wisconsin	1785	4	16	575	0	2
Minnesota	1723	14	21	622	1	4
New Mexico	1657	18	37	246	3	2
Utah	1641	20	15	355	1	2
Oregon	1534	14	29	760	0	1
Nevada	1415	13	17	435	0	1
Nebraska	1258	14	24	265	1	1
Arkansas	1136	2	17	412	0	0
Rhode Island	989	0	11	244	0	0
Montana	983	10	10	220	0	1
District of Columbia	936	2	9	161	1	0
Alabama	901	3	27	568	1	0
New Hampshire	848	4	24	249	3	0
Maine	628	10	8	281	2	1
Delaware	594	1	4	106	1	0
Hawaii	537	0	3	130	0	0
Idaho	490	7	17	176	0	1
Vermont	433	3	1	160	0	0
Wyoming	421	7	7	112	1	0
South Dakota	394	6	5	94	2	0
North Dakota	392	5	5	188	0	1
Alaska	296	5	9	129	3	0
Armed Forces-Europe	28	0	1	29	1	0
Virgin Islands	24	0	0	9	0	0
Guam	9	0	0	10	0	0
American Samoa	8	0	0	0	0	0
Armed Forces-Pacific	7	0	0	9	0	0
Armed Forces-Americas	1	0	0	5	0	0
Federated States of Micronesia	1	0	0	1	0	0
Northern Marianas	1	0	0	3	0	0
Palau	1	0	0	0	0	0
TOTALS	235,141	1,101	2,304	54,583	87	101

**Note*: For Malpractice Payment: $\chi^2 = 1{,}472.12$; df =120; p< 0.0001; effective sample size n=238,546.
† For AA: $\chi^2 = 302.03$; df =120; p= 0.0002; effective sample size n=238,546.

Table 18 provides the ratio of malpractice payments to adverse action reports by state and the percent of adverse actions to malpractice payments over the 17 year study period. This table compares the number of adverse actions taken against providers' ability to practice to the number of malpractice payments over the same period. The table is displayed in rank order from highest percentage of adverse actions to malpractice payments to lowest. The average ratio was 4.4 malpractice payments to one adverse action report. In percent, the occurrence of adverse actions reports was 23% of malpractice payments on average. Some smaller jurisdictions and military jurisdictions had more adverse actions than malpractice payments, and two had no adverse actions at all. The majority of states and jurisdictions had greater than the 23% average adverse action reports to malpractice payments.

Table 18. *Ratio of Adverse Actions per Malpractice Payments by State, 1991-2007*

State/Jurisdiction	Malpractice Payments	Adverse Actions	Ratio	Percent
Armed Forces-Americas	1	5	0.2	500%
Northern Marianas	1	3	0.3	300%
Armed Forces-Pacific	7	9	0.8	129%
Guam	9	10	0.9	111%
Armed Forces-Europe	29	30	1.0	103%
Federated States of Micronesia	1	1	1.0	100%
Alabama	931	569	1.6	61%
Colorado	2578	1416	1.8	55%
Oklahoma	1998	1070	1.9	54%
Arizona	3911	2091	1.9	53%
Virginia	3310	1606	2.1	49%
Oregon	1577	761	2.1	48%
North Dakota	402	189	2.1	47%
Kentucky	2716	1227	2.2	45%
Maine	646	284	2.3	44%
Alaska	310	132	2.3	43%
West Virginia	2128	802	2.7	38%
Virgin Islands	24	9	2.7	38%
Georgia	4403	1630	2.7	37%
Vermont	437	160	2.7	37%
Arkansas	1155	412	2.8	36%
Minnesota	1758	627	2.8	36%
South Carolina	2152	762	2.8	35%
Massachusetts	4561	1579	2.9	35%
Ohio	9578	3299	2.9	34%
Idaho	514	177	2.9	34%
Iowa	1870	637	2.9	34%
Maryland	3833	1279	3.0	33%
Wisconsin	1805	577	3.1	32%
California	24334	7518	3.2	31%
Mississippi	1849	567	3.3	31%

Table 18. (*continued*)

State/Jurisdiction	Malpractice Payments	Adverse Actions	Ratio	Percent
Nevada	1445	436	3.3	30%
New Hampshire	876	252	3.5	29%
Tennessee	2947	801	3.7	27%
Washington	3690	993	3.7	27%
North Carolina	3639	973	3.7	27%
Wyoming	435	113	3.8	26%
Kansas	2404	622	3.9	26%
Missouri	4341	1105	3.9	25%
Rhode Island	1000	244	4.1	24%
Hawaii	540	130	4.2	24%
South Dakota	405	96	4.2	24%
Connecticut	2574	589	4.4	23%
Louisiana	4664	1052	4.4	23%
Montana	1003	221	4.5	22%
Texas	16652	3629	4.6	22%
Utah	1676	358	4.7	21%
Nebraska	1296	267	4.9	21%
New Jersey	9598	1719	5.6	18%
Delaware	599	107	5.6	18%
Illinois	9351	1615	5.8	17%
District of Columbia	947	162	5.8	17%
Florida	17037	2884	5.9	17%
Michigan	11926	1849	6.4	16%
New Mexico	1712	251	6.8	15%
Indiana	4583	650	7.1	14%
New York	31293	2666	11.7	9%
Pennsylvania	20419	1505	13.6	7%
Puerto Rico	2657	26	102.2	1%
American Samoa	8	0	0.0	0%
Palau	1	0	0.0	0%
TOTAL	238546	54771	4.4	23%

Table 19 displays the adjusted mean, median and total malpractice payments for the three provider types over the 17 year study period in 2008 dollars. The total malpractice payments for

the 17 years for all providers exceeded 74 billion dollars. Physician assistant payments comprised just 0.003% of the total and APN payments comprised only 0.007% of the total (see Figure 20). The average and median APN payments were the highest at $350,540 and $190,898. The average and median physician payments were $301,150 and $150,821while the average and mean PA payments were $173,128 and $80,003. The physician adjusted mean payment was 1.74 times higher than PAs but only 0.86 that of APNs. The physician adjusted median payments were 1.89 times that of PAs but only 0.79 that of APNs. The APN adjusted mean payments were 2.02 times that of PAs and median payments were 2.40 times that of PAs.

Table 19. *Malpractice Payment (Adjusted) Amount for the Period Jan. 1. 1991-Dec. 31, 2007*

Type of Provider	Number of Entries	Mean	Median	Sum
Physicians	245,267	301,150	150,821	73,800.81
PAs	1,222	173,128	80,003	245.05
APNs	2,608	350,540	190,898	541.01
Total:	249,097			74,586.87

Note: ANOVA (Scheffe) was used with F=35.58; df=2; and p<0.0001. Mean and median are reported in dollars; total is reported in millions of dollars, adjusted for inflation to 2008 dollars using the CPI as reported by the U.S. BLS.

Table 20 displays the adjusted mean, median and total malpractice payments by year for the study period for all three provider types. In combination with Figures 16-26, these data presentation examined trends in malpractice payments over the study period. These data were also reported in Table 21 adjusted to 1991dollars in order to make comparisons with earlier research.

Table 20. *Malpractice Payment (Adjusted) Amount by Year from 1991 to 2007**

Provider		1991	1992	1993	1994	1995	1996
Physician	Mean	250,453	267,211	269,733	269,033	275,592	286,504
	Median	107,361	111,945	116,187	120,595	131,486	134,618
	Total	3,355.10	3,925.86	3,946.60	4,065.10	3,845.40	4,351.80
PA	Mean	102,533	99,620	123,126	148,277	127,924	126,946
	Median	75,551	30,881	48,723	69,433	60,412	31,066
	Total	1.43	3.00	4.06	6.52	4.99	5.59
APN	Mean	194,539	314,089	328,970	213,261	367,535	383,098
	Median	59,645	254,770	97,447	76,742	277,187	227,816
	Total	5.65	9.42	8.56	5.54	7.72	14.18

Table 20. (*continued*)*

Provider		1997	1998	1999	2000	2001	2002
Physician	Mean	286,394	291,439	291,265	309,258	323,851	325,704
	Median	131,599	129,580	136,533	157,253	165,135	174,606
	Total	4,162.30	4,063.30	4,352.50	4,777.43	5,366.21	4,952.80
PA	Mean	142,250	169,279	169,279	160,693	193,398	198,787
	Median	57,364	68,266	68,266	84,917	105,916	93,324
	Total	6.55	12.69	12.69	11.72	15.67	24.46
APN	Mean	244,040	266,138	418,487	427,886	420,064	468,838
	Median	263,203	99,677	208,050	245,315	226,295	295,024
	Total	17.06	12.24	29.30	23.97	39.07	52.51

Table 20. (*continued*)*

Provider		2003	2004	2005	2006	2007
Physician	Mean	342,507	338,308	322,620	331,866	337,812
	Median	182,489	189,223	194,115	188,049	193,289
	Total	5,217.41	4,863.80	4,522.00	4,148.70	3,884.50
PA	Mean	309,953	204,884	237,619	249,370	179,243
	Median	147,168	111,814	108,150	104,770	94,032
	Total	36.89	27.66	26.13	28.18	16.82
APN	Mean	505,453	381,787	377,705	329,150	318,142
	Median	229,583	200,691	160,838	155,812	167,169
	Total	58.13	46.96	70.23	62.21	78.26

**Note:* ANOVA (Scheffe) F=35.58; df=2; and p<0.0001. Mean and median reported in dollars; total payments reported in millions of dollars, adjusted for inflation to 2008 dollars based on the CPI as reported by the U.S. BLS.

Figures 16 -26 demonstrate the trends in average, median and total malpractice payment amounts for the 17 year study period adjusted for inflation to 2008 dollars. Total, average and median payment amounts increased throughout the study period for all three provider groups. As previously noted the average and median payment amounts of APNs were higher than that of physicians and PAs. Physician payments comprised 98.9% of total payments for the three provider groups during the study period. Physician total payment amount peaked in 2001 and 2003 and then declined each year since. PA total payment amount also peaked in 2003 and in 2006 but declined in 2007. APN total payments amount saw its first peak in 2003 but then

continued an overall upward slope peaking again in 2005 and 2007. There were spikes in median payment for APNs in 2002 and PAs in 2003. Median payments for PAs and APNs have been decreasing overall since 2003. Trends in average and median payments are discussed in Chapter V.

Figure 16. *Physician, PA and APN Average Malpractice Payments by Year 1991-2007*

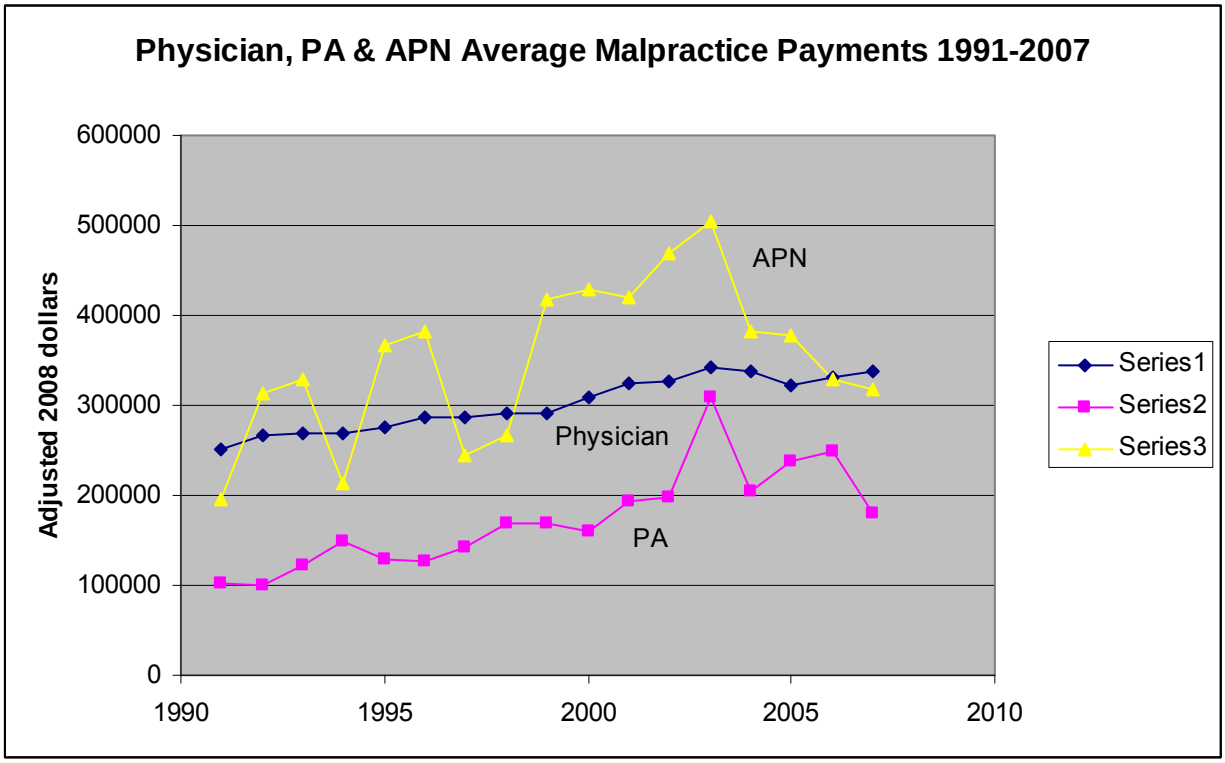

Figure 17. *Physician, PA and APN Median Malpractice Payments by Year 1991-2007*

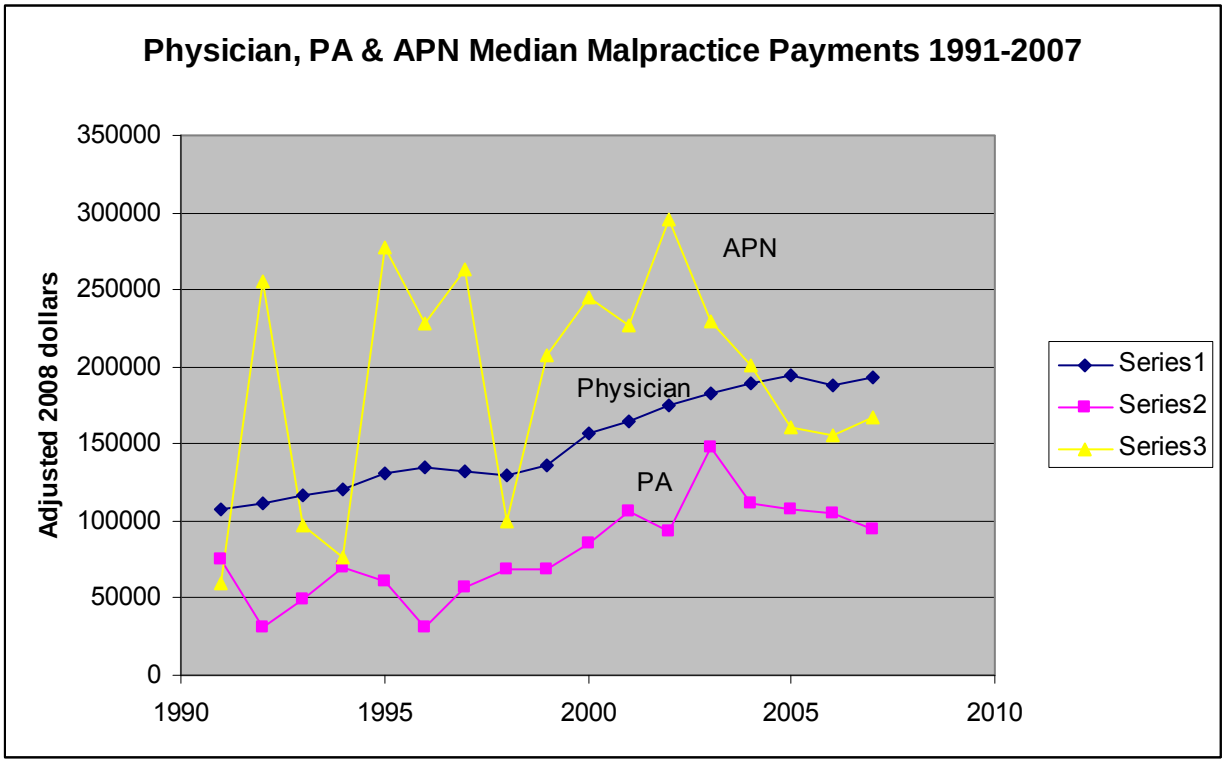

Figure 18. *Average Malpractice Payment 1991-2007*

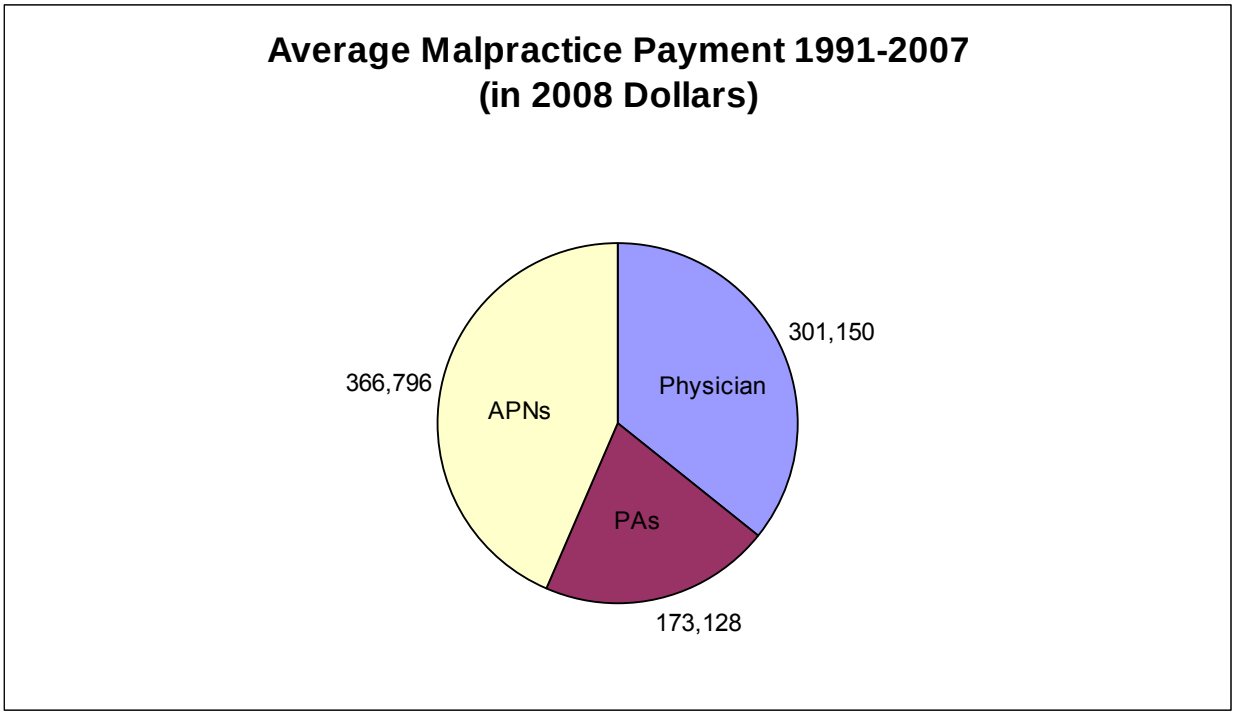

Figure 19. *Average of Median Malpractice Payments 1991-2007*

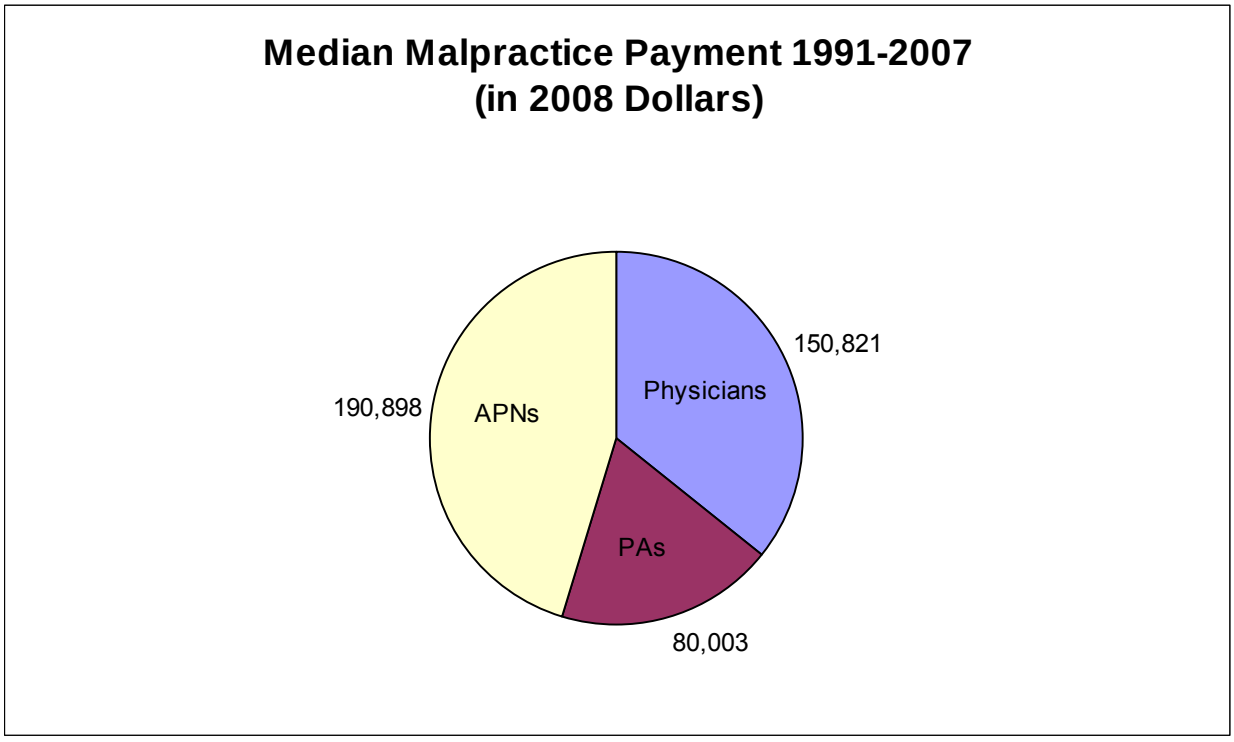

Figure 20. *Total Malpractice Payments in Millions 1991-200*

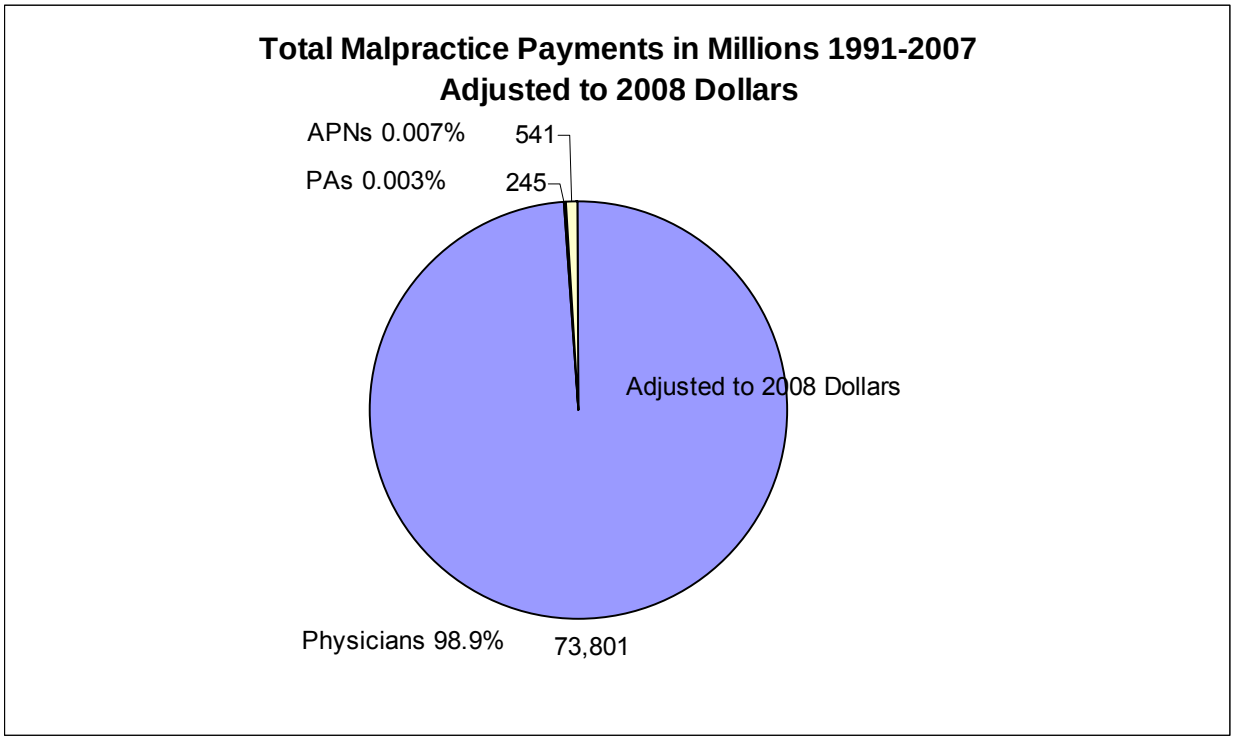

Figure 21. *Physician Total Malpractice Payments by Year 1991-2007 (in millions)*

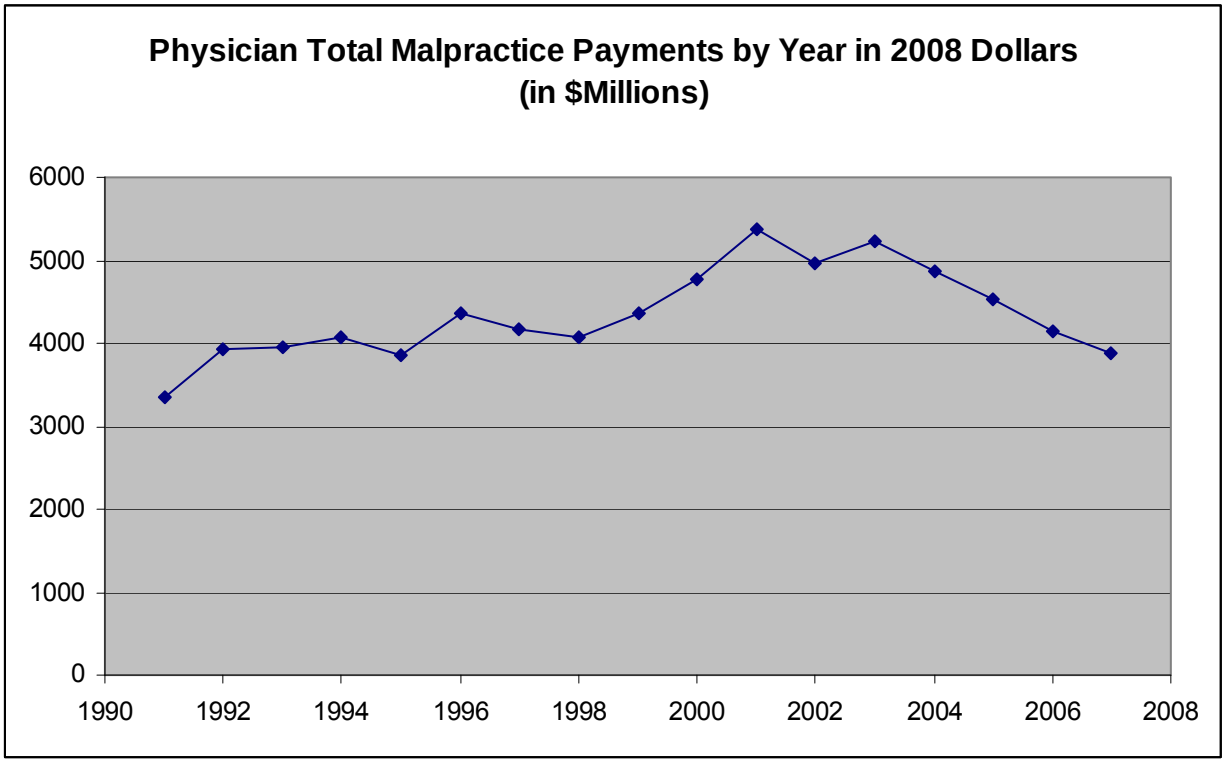

Figure 22. *Physician Median Malpractice Payments by Year 1991-2007*

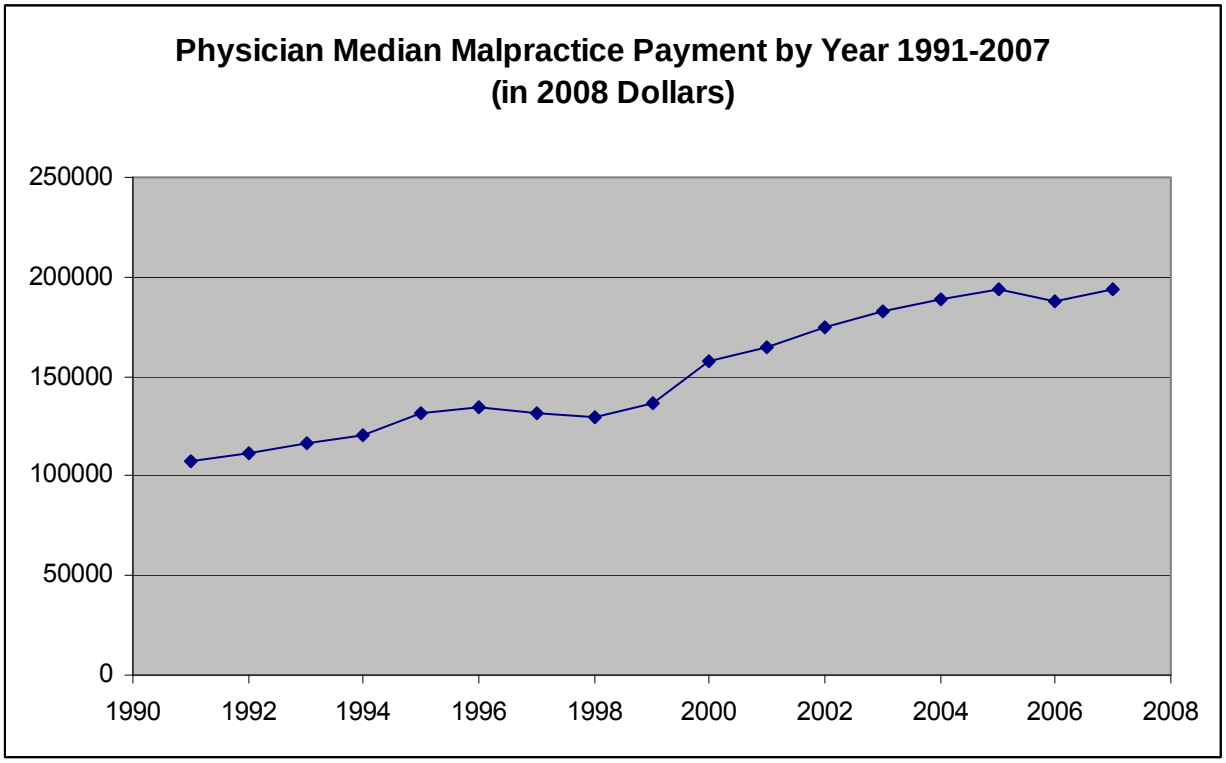

Figure 23. *PA Total Malpractice Payments by Year 1991-2007 (in millions)*

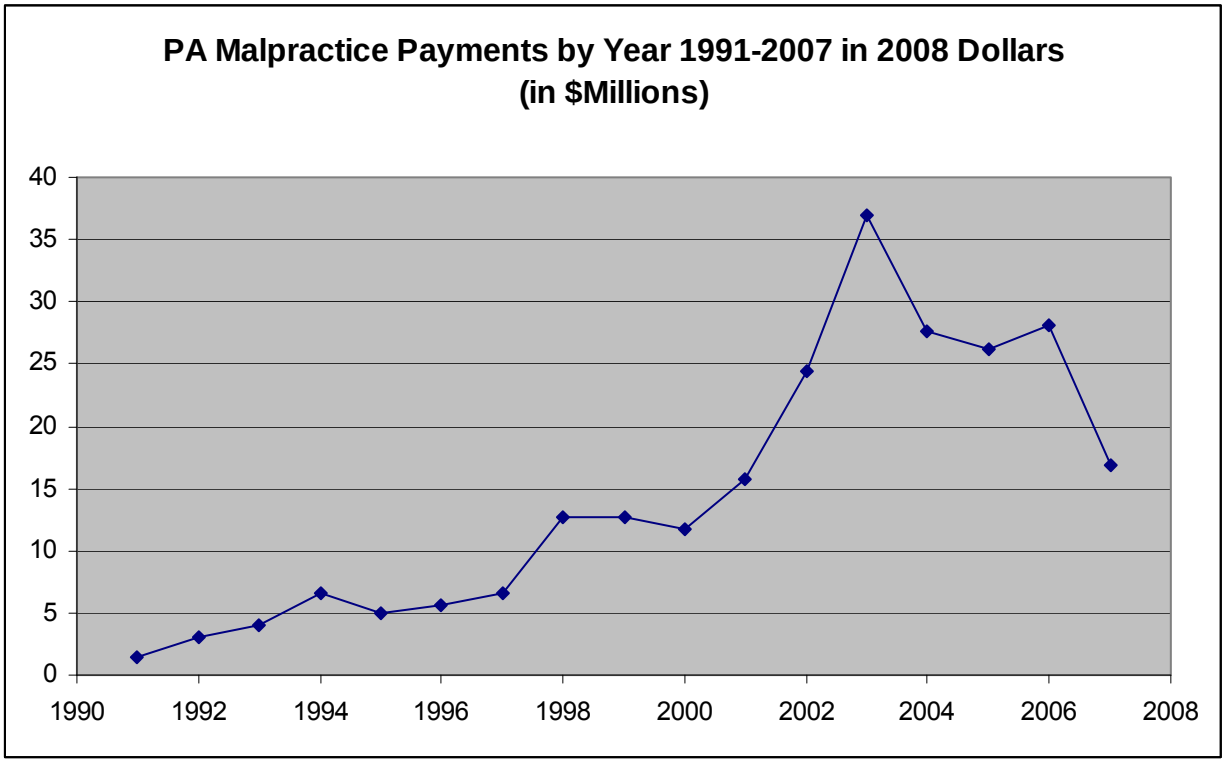

Figure 24. *PA Median Malpractice Payments by Year 1991-2007*

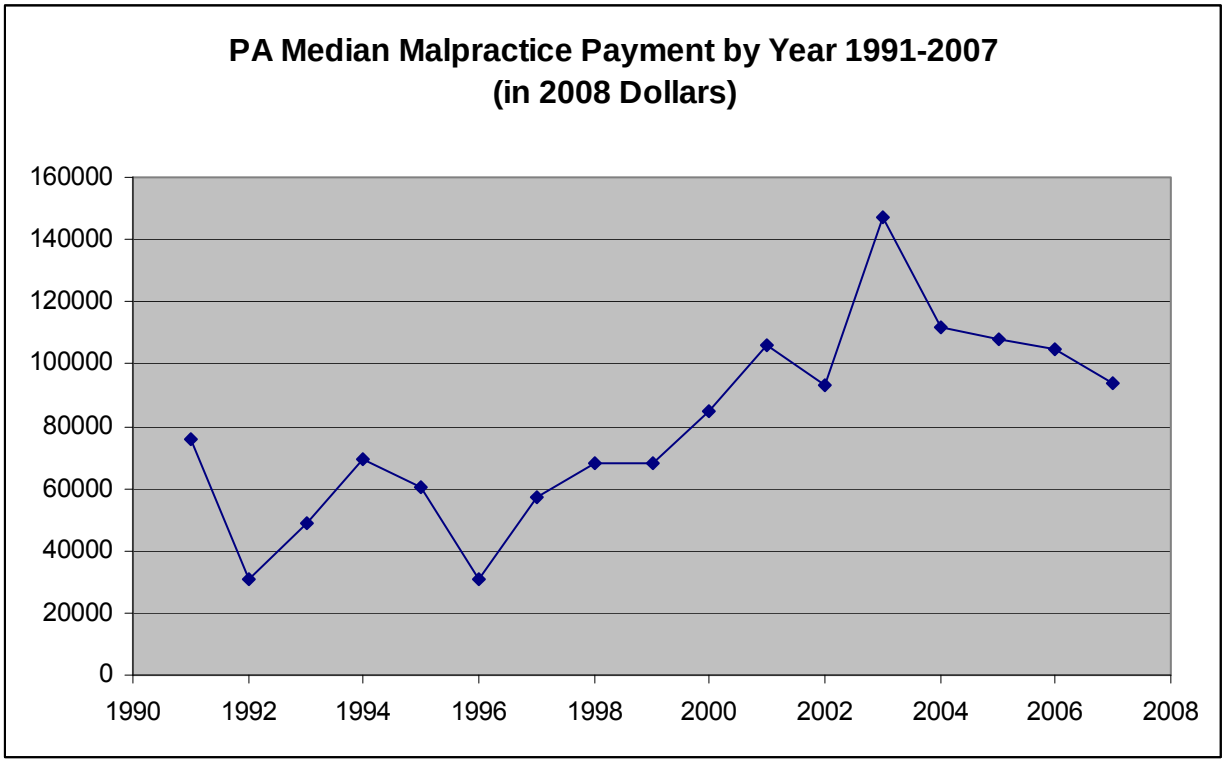

Figure 25. *APN Total Malpractice Payments by Year 1991-2007 (in millions)*

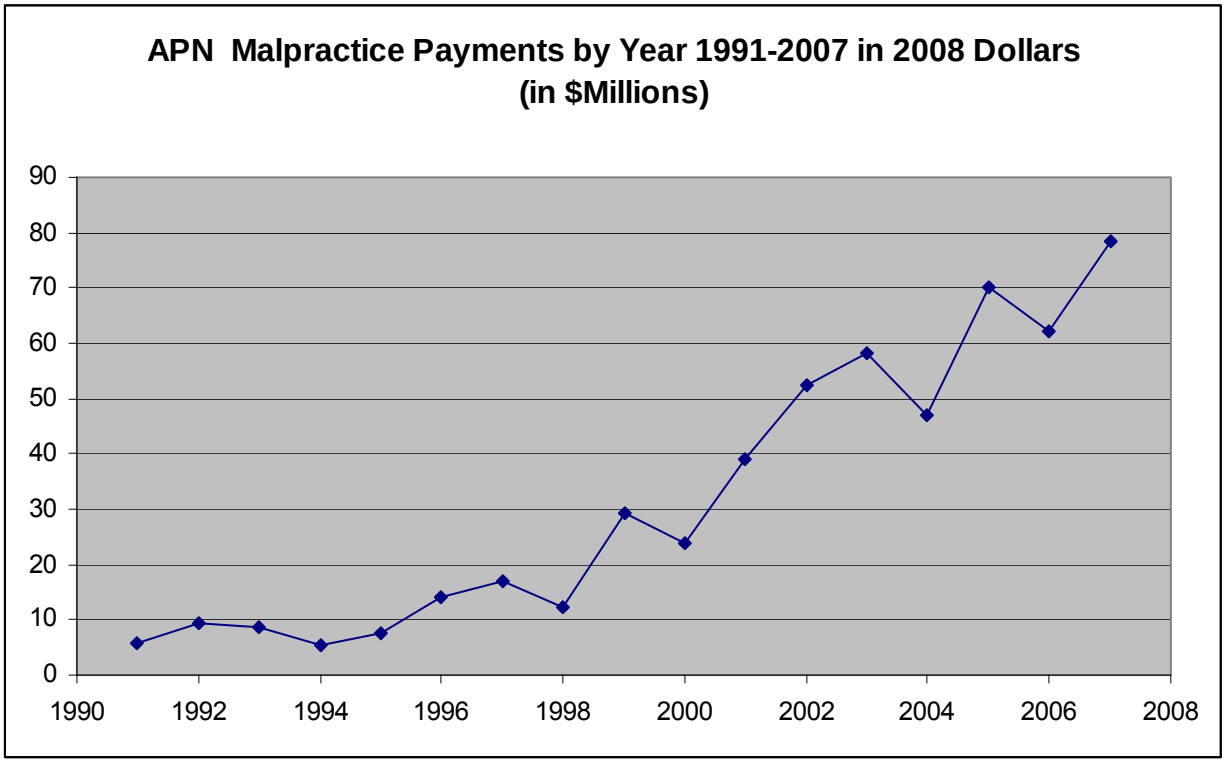

Figure 26. *APN Median Malpractice Payments by Year 1991-2007*

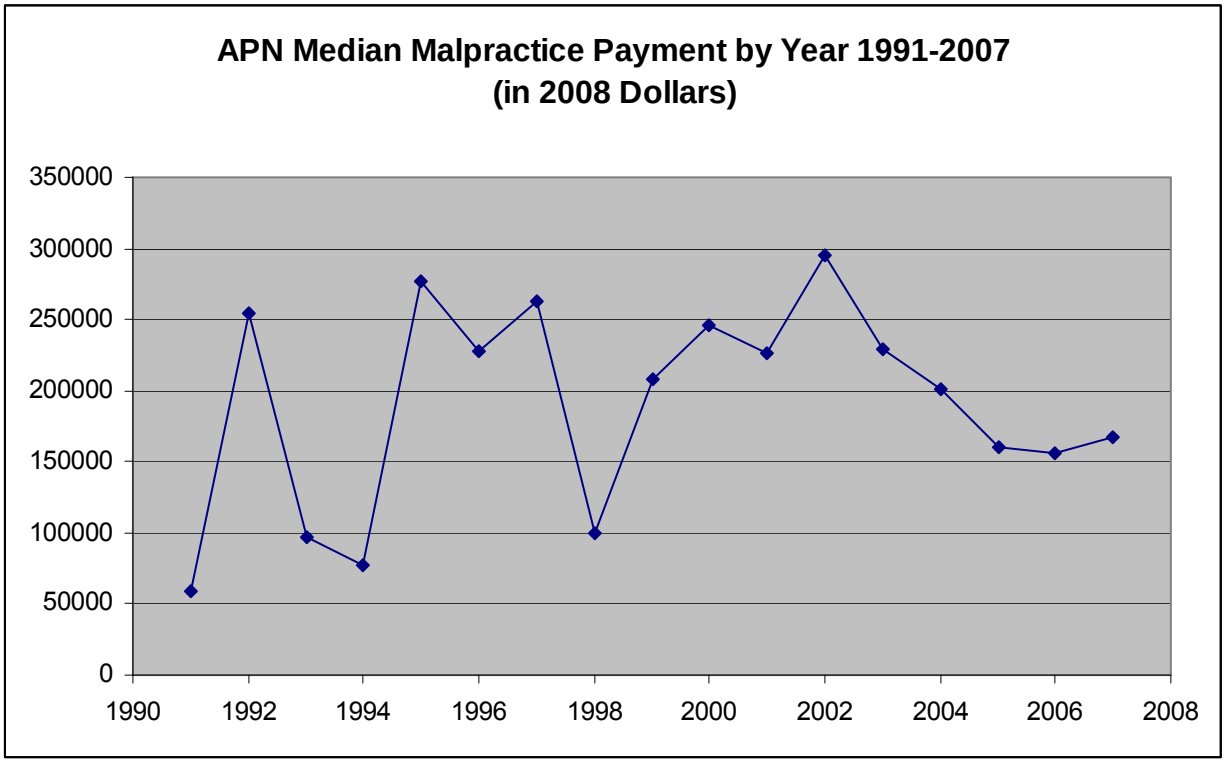

Table 21 displays mean and median malpractice payments adjusted to 1991 dollars for the full 17 year study period. Dollar amounts for 1991 were chosen to make similar comparisons to the 1998 studies of Brock and Cawley discussed in Chapters II and V. Physician adjusted mean payments are 1.75 times higher than PAs but only 0.86 that of APNs. Physician adjusted median payments are 1.90 times that of PAs but only 0.80 that of APNs. This table will be discussed in Chapter V.

Table 21. *Malpractice Payment (Adjusted to 1991 Dollars) Amount Jan. 1, 1991 – Dec. 31, 2007*

Type of Provider	Number of Entries	Mean	Median	Sum*
Physicians	245,267	189,278	94,845	46,376.2
PAs	1,222	108,246	49,924	148.2
APNs	2,608	220,390	119,198	339.8
Total	249,097			46,864.2

**Note:* ANOVA (Scheffe) F=35.58; df=2; and p<0.0001; effective sample size n=249,072. Total is reported in millions of dollars.

Table 22 displays the adjusted mean, median and total malpractice payments by year for the study period, adjusted to 1991 dollars. The Consumer Price Indexes (CPI) from the U.S. Department of Labor, Bureau of Labor Statistics was used to estimate the amount of mean and median (in dollars) and total amount (in millions of dollars) by year adjusted to 1991 dollar values (www.bls.gov/cpi). Graphs are not presented for the adjusted amounts because trends may be determined as validly from the unadjusted amounts. The 1991adjustment is discussed in Chapter V.

Table 22. *Malpractice Payment (Adjusted to 1991 Dollars) Amount by Year from 1991 to 2007**

Provider		1991	1992	1993	1994	1995	1996
Physician	Mean	157,464	168,000	169,585	169,145	172,955	180,129
	Median	67,500	70,381	73,048	75,820	82,667	84,637
	Total	2,109.4	2,468.25	2,480.87	2,638.84	2,417.75	2,735.62
PA	Mean	64,464	62,633	77,412	93,224	80,428	79,813
	Median	47,500	19,416	30,633	43,654	37,982	19,532
	Total	0.90	1.88	2,.55	4.1	3.14	3.52
APN	Mean	122,310	197,473	206,829	134,081	231,075	240,860
	Median	37,500	160,178	61,266	48,249	174,272	143,231
	Total	3.55	5.92	5.38	3.84	4.85	8.92

Table 22. (*continued*)*

Provider		1997	1998	1999	2000	2001	2002
Physician	Mean	180,061	183,232	183,123	194,435	203,610	204,775
	Median	82,738	81,469	85,840	98,868	103,823	109,778
	Total	2,583.48	2,554.99	2,736.78	3,003.65	3,373.82	3,113.4
PA	Mean	89,435	96,181	106,428	101,030	121,593	124,981
	Median	36,065	39,690	42,920	53,389	63,447	58,674
	Total	4.05	4.71	7.98	7.37	9.85	15.38
APN	Mean	153,432	167,325	263,110	269,019	264,101	294,766
	Median	148,505	62,669	130,804	154,233	142,276	185,486
	Total	10.73	7.7	18.42	15.07	24.56	33.02

Table 22. (*continued*)*

Provider		2003	2004	2005	2006	2007
Physician	Mean	215,340	212,700	202,139	208,649	212,388
	Median	114,734	118,968	122,043	118,229	121,824
	Total	3,208.27	3,057.85	2,842.95	2,608.12	2,442.20
PA	Mean	194,873	128,814	149,395	156,783	112,693
	Median	92,527	70,299	67,995	65,871	59,120
	Total	23.19	17.39	16.43	17.71	10.60
APN	Mean	317,786	240,036	237,469	206,942	200,021
	Median	144,342	129,178	101,121	97,961	105,102
	Total	36.54	29.53	43.45	39.11	49.20

**Note:* ANOVA (Scheffe) F=35.58; df=2; and p<0.0001; effective sample size n=249,072. Mean and median is reported in dollars; total is reported in millions of dollars.

Table 23 displays the ratio of malpractice payments per total number of providers in 2006 for each provider type. The most recent available surveys for the provider groups were in 2006. There were 12,495 payments for 774,883 active physicians, 113 payments for 63,609 active PAs and 264 payments for 268,293 both active and non-active APNs. The ratios were 1:62, 1:563 and 1:1016 respectively. This table allows calculation of the probability of malpractice payment by provider type in 2006. See Chapter V for an interpretation of this analysis and precautions about conclusions.

Table 23. *Ratio of Payment Entries per Active Provider in 2006**

Provider		Payment Amount
Physicians (Including M.D. and D.O. physician interns/residents)	Mean Payment	$308,838
	Number	12,495
	Median Payment	$175,000
	Total MD/DOs in 2006	774,883
	Payment Ratio for Physicians	1:62
Physician Assistants (PAs)	Mean Payment	$232,066
	Number	113
	Median Payment	$97,500
	Total PAs in 2006	63,609
	Payment Ratio for PAs	1:563
Advanced Practice Nurses (APNs)	Mean Payment	$306,310
	Number	264
	Median Payment	$145,000
	Total APNs in 2006	268,293
	Payment Ratio for APNs	1:1016

***Note:* ANOVA (Scheffe) F=35.58; DF=2;, and p<0.0001; effective sample size n=249,072.
Data for active physicians is from the *Physician Characteristics and Distribution in the US*, 2008 edition, American Medical Association received from Judy Torres, Data Coordinator, Survey & Data Resources, American Medical Association, personal communication, May 14, 2008.
Data for active physician assistants from the *American Academy of Physician Assistants Information Update* posted at http://www.aapa.org/research/06number-clinpractice06.pdf retrieved May 13, 2008.
Data for APNs from the National Nursing Survey Report of the U.S. Health Resources and Services Administration posted at http://bhpr.hrsa.gov/healthworkforce/nursing.htm retrieved July 12, 2008. NNSR data includes both active and non-active APNs.

Table 24 provides the number of malpractice payments over the 17 year period per average number of active providers within the 17 year study period. This provided an estimate of the probability of malpractice payment by provider type in the 17 study period. The average number of active providers was calculated by averaging the number of active providers in each year of the study period. The estimated number of providers for years in which a survey was not taken was calculated by determining the annual difference between known years. There was one payment report for every 2.7 active physicians, one for every 32.5 active PAs and one for every 65.8 active and non-active APNs. In percent, 37% of physicians, 3.08% of PAs and at least 1.52% of APNs would have made a malpractice payment over the 17 year period. The analysis assumed one malpractice payment per provider.

Table 24. *Ratio of Malpractice Payments per Provider Type 1991-2007*

Type of Provider	Malpractice Payments	Average Providers	Ratio of Payments to Providers	Percent Probability
Physician	245,267	663,928	1:2.7	37%
PA	1,222	39,751	1:32.5	3.08%
APN*	2,608	171,562	1:65.8	1.52%

**Note*: Average number of APNs in the 17 year period includes both active and non-active providers.
ANOVA (Scheffe) F=35.58; df=2; and p<0.0001; effective sample size n=249,072.

Figure 27. *Probability of Malpractice Payment 1991-2007*

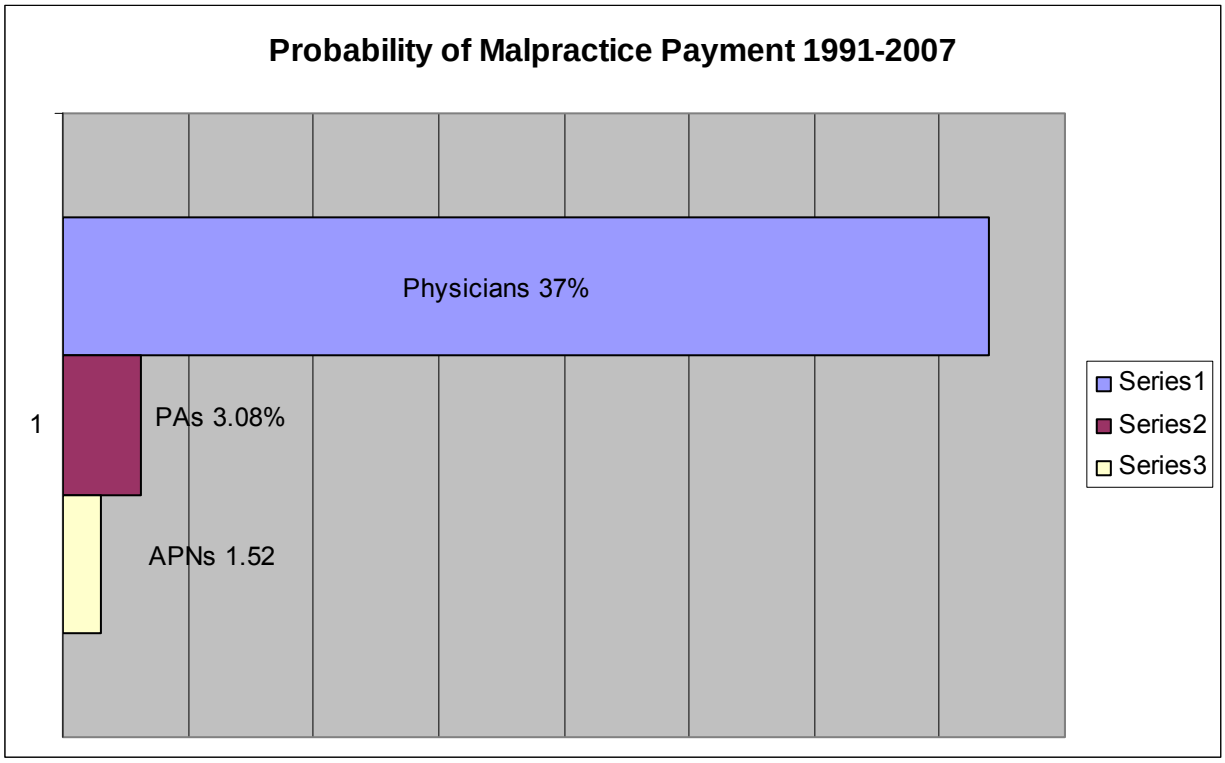

Table 25 displays the most common bases for adverse action reports since reporting began for this category (11/22/1999 to 12/31/2007). The most common basis for action by reporting entities by far was a licensing action by federal, state or local licensing authorities for physicians and PAs. This was followed by unprofessional conduct, alcohol and other substance abuse, criminal conviction and narcotic violation. The most common basis for action against APNs was unprofessional conduct.

Table 25. *Most Common Bases for Action by Reporting Entities from Nov. 22. 1999 – Dec. 31, 2007*

Adverse Action Report	Physician	PA	APN
License Action by Federal, State and local licensing authorities	10,336	107	1
Unprofessional conduct	7,301	12	11
Alcohol and/or other substance abuse	3,550	7	8
Criminal conviction	2,076	3	1
Narcotic Violation	1,687	2	5

Note: $\chi^2 = 2048.02$; df =168; p< 0.0001; effective sample size n=75,164. Field = BASISCD1.

Five adverse action types are reported to the NPDB: state and medical board licensing actions; clinical privileges actions; professional society membership actions; practitioner exclusions from Medicare and Medicaid programs; and U.S. D.E.A. actions. Please note that of these five adverse actions, state and medical board licensing actions, clinical privileges actions, and professional society membership actions were not required reporting elements for PAs and APNs. Therefore PA and APN data for those three voluntary reporting actions have been omitted from their respective tables. Table 26 displays state and medical board licensing actions for the 17 year study period. Of the five adverse action types taken against three providers, state and medical board actions represented the largest proportion (67%) of all actions taken. Using the

2006 active provider census data, 5.7% or 1 of 17.5 physicians had state and medical licensing board actions taken against them in the 17 year study period.

Table 26. *State and Medical Board Licensing Actions for the Period January 1, 1991-December 31, 2007**

	Physicians	PAs	APNs	Total
State & Medical Board Licensing Actions	44,330	NA	NA	44,330 (67.0%)

**Note*: 67.0% of all AA Classes (n=66,173) recorded in the NPDB from 1/1/91-12/31/07. NA=Not applicable as data was voluntarily reported. Data fields AACLASS1={1110-1296}. Chi-square and p-value are not relevant due to absence of data for PAs and APNs.

Table 27 displays state and medical board licensing actions by year of action. Physicians had actions recorded in all study years.

Table 27. *State and Medical Board Licensing Actions by Year 1991-2007*

Year	Physicians	PAs	APNs	Total
1991	1,793	NA	NA	1,793
1992	1,824	NA	NA	1,824
1993	2,228	NA	NA	2,228
1994	2,476	NA	NA	2,476
1995	2'819	NA	NA	2,819
1996	2,906	NA	NA	2,906
1997	2,773	NA	NA	2,773
1998	2,878	NA	NA	2,878
1999	2,773	NA	NA	2,774
2000	2,376	NA	NA	2,376
2001	2,473	NA	NA	2,473
2002	2,499	NA	NA	2,499
2003	2,777	NA	NA	2,777
2004	2,959	NA	NA	2,961
2005	3,037	NA	NA	3,037
2006	3,034	NA	NA	3,034
2007	2,702	NA	NA	2,702
Total	44,787	NA	NA	44,790

Note: NA=Not applicable as data was voluntarily reported. Chi-square and p-value are not relevant due to absence of data for PAs and APNs.

Table 28 displays state and medical licensing board actions by state for the 17 year study period. The states with the largest number of actions taken against physicians were California, Texas, Ohio, Florida and Arizona. However, the states with the most adverse actions against physicians were not necessarily those with the most malpractice payments. New York had the highest number of malpractice payments, but ranked fifth in state and medical board licensing actions. Likewise Pennsylvania ranked third in malpractice payments but 20th in state and medical licensing actions. Table 29 compares the rank by state of the top twenty physician malpractice payments and medical licensing board actions.

Table 28. *State and Medical Licensing Board Actions by State, 1991-2007*

State	Physicians	PAs	APNs	Total
California	5258	NA	NA	5258
Texas	2273	NA	NA	2273
Ohio	2143	NA	NA	2143
Florida	1665	NA	NA	1665
Arizona	1540	NA	NA	1541
New York	1326	NA	NA	1326
Virginia	1052	NA	NA	1052
Colorado	1043	NA	NA	1043
New Jersey	1027	NA	NA	1027
Illinois	1010	NA	NA	1010
Michigan	995	NA	NA	995
Georgia	920	NA	NA	920
Kentucky	912	NA	NA	912
Missouri	776	NA	NA	776
Massachusetts	768	NA	NA	768
Maryland	766	NA	NA	766
Louisiana	658	NA	NA	658
West Virginia	619	NA	NA	619
Oklahoma	617	NA	NA	617
Pennsylvania	605	NA	NA	605
North Carolina	552	NA	NA	553
Washington	517	NA	NA	518
Oregon	511	NA	NA	511
Tennessee	433	NA	NA	433
Iowa	420	NA	NA	420
South Carolina	414	NA	NA	414
Connecticut	397	NA	NA	397
Mississippi	360	NA	NA	360
Minnesota	340	NA	NA	340
Kansas	338	NA	NA	338

Table 28. (*continued*)

State	Physicians	PAs	APNs	Total
Alabama	313	NA	NA	313
Wisconsin	283	NA	NA	283
Indiana	242	NA	NA	242
Utah	224	NA	NA	224
Nevada	210	NA	NA	210
Arkansas	195	NA	NA	195
Maine	182	NA	NA	182
New Mexico	142	NA	NA	142
New Hampshire	130	NA	NA	130
Montana	128	NA	NA	128
Rhode Island	127	NA	NA	127
North Dakota	124	NA	NA	124
Nebraska	122	NA	NA	122
Idaho	99	NA	NA	99
Vermont	93	NA	NA	93
District of Columbia	83	NA	NA	83
Alaska	79	NA	NA	79
Wyoming	73	NA	NA	73
Hawaii	59	NA	NA	59
Delaware	52	NA	NA	52
South Dakota	49	NA	NA	49
Puerto Rico	8	NA	NA	8
Armed Forces-Americas	2	NA	NA	2
Armed Forces-Europe	2	NA	NA	2
Guam	2	NA	NA	2
Northern Marianas	2	NA	NA	2
Armed Forces-Pacific	1	NA	NA	1
TOTAL	33,284	NA	NA	33,287

Note: NA=Not applicable as data was voluntarily reported. Data fields WORKSTAT & AACLASS1 (1110-1296) with 1991<=AAYEAR<=2007. Only 33,284 records were available in the NPDB for this descriptive analysis (missing 21,531). Chi-square and p-value are not relevant due to absence of data for PAs and APNs.

Table 29. *State Rank of Physician Malpractice Payments and State and Medical Board Licensing Actions*

Malpractice Payment Incidence			State and Medical Board Adverse Actions		
Rank	State		Rank	State	
1	New York	30951	1	California	5258
2	California	24158	2	Texas	2273
3	Pennsylvania	20274	3	Ohio	2143
4	Florida	16639	4	Florida	1665
5	Texas	16381	5	Arizona	1540
6	Michigan	11773	6	New York	1326
7	New Jersey	9546	7	Virginia	1052
8	Ohio	9492	8	Colorado	1043
9	Illinois	9303	9	New Jersey	1027
10	Indiana	4571	10	Illinois	1010
11	Louisiana	4571	11	Michigan	995
12	Massachusetts	4466	12	Georgia	920
13	Georgia	4285	13	Kentucky	912
14	Missouri	4284	14	Missouri	776
15	Arizona	3808	15	Massachusetts	768
16	Maryland	3755	16	Maryland	766
17	Washington	3601	17	Louisiana	658
18	North Carolina	3544	18	West Virginia	619
19	Virginia	3257	19	Oklahoma	617
20	Tennessee	2859	20	Pennsylvania	605

Note: $\chi^2 = 80.82$; df =112; p=9884; effective sample size n=33,284.

Table 30 displays clinical privileges actions for the 17 year study period. Clinical privilege actions were the second most common type of adverse action taken against providers constituting 22.3% of all adverse actions in the dataset. There were 14,547 actions reported against physicians which are 1.9% of the number of all active physicians of 2006.

Table 30. *Clinical Privilege Actions for the Period January 1, 1991-December 31, 2007**

	Physicians	PAs	APNs	Total
Clinical Privilege Actions	14,547	NA	NA	15,739 (22.3%)*

**Note:* 22.3% of all AA Classes (n=66,173) recorded in the NPDB from 1/1/91-12/31/07 includes voluntary submissions for PAs and APNs. NA=Not Applicable as data was voluntarily reported for PAs and APNs Data fields for Clinical Privileges Actions (AACLASS1={1610-1699}). Chi-square and p-value are not relevant due to absence of data for PAs and APNs.

Table 31 displays clinical privilege actions by year for each year of the study period for physicians. The number of physician actions displayed a mild downward trend from 1991 to 1998, a mild upward trend from 1998 to 2004, and then a more moderate downward trend from 2004 to 2007. PA and APN data was not included because their voluntary reporting status would make comparisons meaningless.

Table 31. *Clinical Privilege Actions by Year 1991- 2007*

Year	Physicians
1991	1000
1992	966
1993	943
1994	864
1995	844
1996	843
1997	819
1998	779
1999	839
2000	930
2001	952
2002	923
2003	895
2004	910
2005	796
2006	661
2007	583
Total	14547

Note: Chi-square and p-value are not relevant due to absence of data for PAs and APNs

Figure 28. *Physician Clinical Privileges Actions 1991-2007*

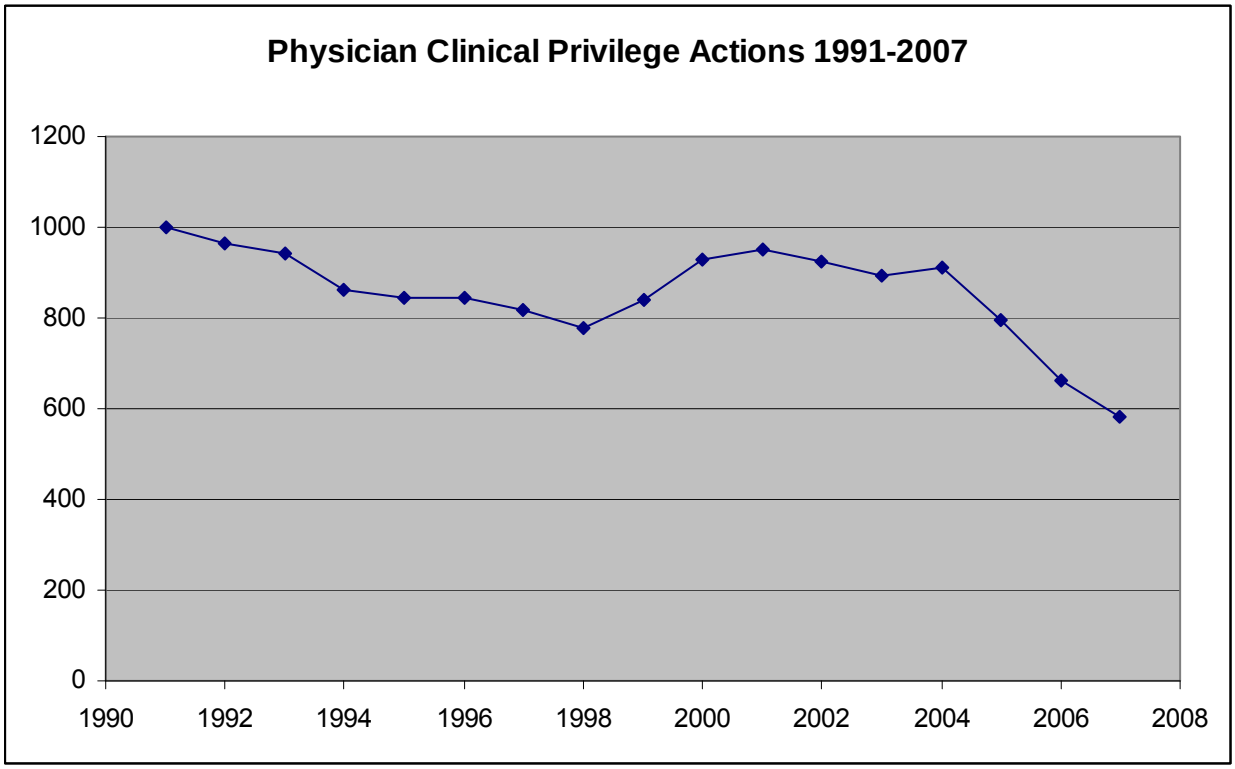

Table 32 displays clinical privilege actions by state for the study period. It is ranked by physician clinical privileges actions. California had the most clinical privilege actions for physicians. It also had 74% more actions than the next highest ranking state of New York and 81% more than Texas. PA and APN actions were omitted in the table due to their voluntary reporting status.

Table 32. *Clinical Privilege Actions by State 1991-2007*

State	Physicians
California	1686
New York	970
Texas	929
Florida	750
Ohio	595
Massachusetts	552
Pennsylvania	518
Michigan	479
Georgia	437
Arizona	430
New Jersey	394
Illinois	377
Washington	338
Maryland	330
Virginia	317
Indiana	313
Tennessee	280
North Carolina	273
Colorado	254
Missouri	236
Kansas	225
Oklahoma	225
Wisconsin	219
Nevada	216
Minnesota	206
Louisiana	205
South Carolina	205
Kentucky	194
Alabama	182

Table 32. (*continued*)

State	Physicians
Oregon	174
Iowa	136
Arkansas	135
Nebraska	130
West Virginia	118
Utah	102
Mississippi	88
Connecticut	86
Rhode Island	84
New Mexico	77
New Hampshire	76
Maine	68
Idaho	63
Hawaii	59
Montana	59
District of Columbia	52
Delaware	43
Vermont	42
North Dakota	41
Alaska	35
South Dakota	34
Wyoming	28
Armed Forces-Europe	26
Puerto Rico	17
Virgin Islands	9
Armed Forces-Pacific	8
Guam	7
Armed Forces-Americas	3
Northern Marianas	1

Note: Data using WORKSTAT & AACLASS1 (1610-1699) with 1991<=AAYEAR<=2007). Only 15,585 records were available in the NPDB for this descriptive analysis. Chi-square and p-value are not relevant due to absence of data for PAs and APNs.

Table 33 displays professional society membership actions for the study period. The number of professional society actions against physicians was 574 for the study period which constituted less than 1% of all adverse actions in the dataset. Actions against PAs and APNs were omitted from the table as reporting was not required for PAs and APNs.

Table 33. *Professional Society Membership Actions for the Period January 1, 1991-December 31, 2007**

	Physicians	Total
Professional Society Membership Actions	574	574 (0.9%)

**Note:* 0.9% of all AA Classes (n=66,173) recorded in the NPDB from 1/1/91-12/31/07. Data fields (AACLASS1={1710-1799}). Chi-square and p-value are not relevant due to absence of data for PAs and APNs.

Table 34 displays professional society membership actions for physicians for the full study period by year. The number of actions sloped downward from 1991until a low in 1999 and has been sloping upward on average from 1999 to 2007.

Table 34. *Professional Society Membership Actions by Year 1991- 2007*

Year	Physicians	Total
1991	29	29
1992	47	47
1993	45	45
1994	34	34
1995	32	32
1996	27	27
1997	26	26
1998	31	31
1999	17	17
2000	27	27
2001	23	23
2002	37	37
2003	48	48
2004	37	37
2005	47	47
2006	25	25
2007	42	42
Total	574	574

Note: Chi-square and p-value are not relevant due to absence of data for PAs and APNs

Table 35 displays professional society membership actions by state for the full study period. The table is ranked by states with the most actions. Oklahoma stood out as the state with third highest professional society membership actions when compared with states that have the highest number of adverse actions overall. There was no reporting requirement for PAs and APNs.

Table 35. *Professional Society Membership Actions by State 1991-2007*

State	Physicians	Total
California	63	63
New York	50	50
Oklahoma	36	36
Florida	34	34
Massachusetts	24	24
Michigan	21	21
Pennsylvania	17	17
Illinois	16	16
Texas	16	16
New Jersey	15	15
Ohio	15	15
Georgia	13	13
Maryland	13	13
Connecticut	11	11
Louisiana	11	11
Washington	11	11
Missouri	9	9
North Carolina	9	9
Minnesota	8	8
Indiana	7	7
Colorado	6	6
Kansas	6	6
Virginia	6	6
District of Columbia	5	5
Rhode Island	5	5
Arizona	4	4
New Mexico	4	4
Tennessee	4	4
Wisconsin	4	4
Kentucky	3	3
Alabama	2	2

Table 35. (*continued*)

State	Physicians	Total
North Dakota	2	2
Vermont	2	2
West Virginia	2	2
Wyoming	2	2
Delaware	1	1
Iowa	1	1
Idaho	1	1
Nebraska	1	1
New Hampshire	1	1
Nevada	1	1
Oregon	1	1
South Carolina	1	1
South Dakota	0	0
Armed Forces-Americas	--	--
Armed Forces-Europe	--	--
Alaska	--	--
Armed Forces-Pacific	--	--
Arkansas	--	--
American Samoa	--	--
Federated States of Micronesia	--	--
Guam	--	--
Hawaii	--	--
Maine	--	--
Marshall Islands	--	--
Northern Marianas	--	--
Mississippi	--	--
Montana	--	--
Puerto Rico	--	--
Palau	--	--
Utah	--	--
Virgin Islands	--	--
TOTALS	464	464

Note: Data fields WORKSTAT & AACLASS1 (1710-1799) with 1991<=AAYEAR<=2007). Only 656 records were available in the NPDB for this descriptive analysis. Chi-square and p-value are not relevant due to absence of data for PAs and APNs.

Table 36 displays practitioner exclusions from Medicare and Medicaid programs. Exclusions from Medicare and Medicaid programs constituted 9.9% of all adverse actions reported in the database. There were 6,311 physicians excluded from Medicare and Medicaid Programs in the study period, or 0.81% of the active physician population of 2006. There were 219 PA exclusions or 0.34% of the active PA population of 2006. There were no APN exclusions. This category was required reporting for all three practitioner groups.

Table 36. *Practitioner Exclusion from Medicare and Medicaid Programs for the period January 1, 1991-December 31, 2007**

	Physicians	PAs	APNs	Total
Practitioner Exclusion from Medicare and Medicaid Programs	6,311	219	0	6,530 (9.9%)

**Note:* 9.9% of all AA Classes (n=66,173) recorded in the NPDB from 1/1/91-12/31/07. Data fields (AACLASS1={1500-1516}). Chi-square=1,748.63, df= 6; effective sample size=67,518, and p<0.0001.

Table 37 and Figures 29 and 30 display practitioner exclusions from Medicare and Medicaid programs by year for the full study period. For both physicians and PAs, the number of exclusions had an overall average increase till 2001 and 2002. In 2001 the number of physician exclusions from Medicare and Medicaid programs began to decline dramatically through 2007. PA exclusions declined dramatically in 2003 from 23 to an average of less than ten for the subsequent four years.

Table 37. *Practitioner Exclusion from Medicare and Medicaid Programs by Year 1991-2007*

Year	Physicians	PAs	APNs	Total
1991	330	2	0	332
1992	316	11	0	327
1993	278	5	0	283
1994	393	21	0	414
1995	402	8	0	410
1996	460	4	0	464
1997	660	20	0	680
1998	648	18	0	666
1999	494	16	0	510
2000	575	20	0	595
2001	614	19	0	633
2002	401	20	0	421
2003	238	23	0	261
2004	129	14	0	143
2005	92	4	0	96
2006	164	8	0	172
2007	117	6	0	123
Total	6311	219	0	6530

Note: $\chi^2 = 73.42$; df =16; p< 0.0001; effective sample size n=6,530.

Figure 29. *Physician Exclusions from Medicare and Medicaid Programs 1991-2007*

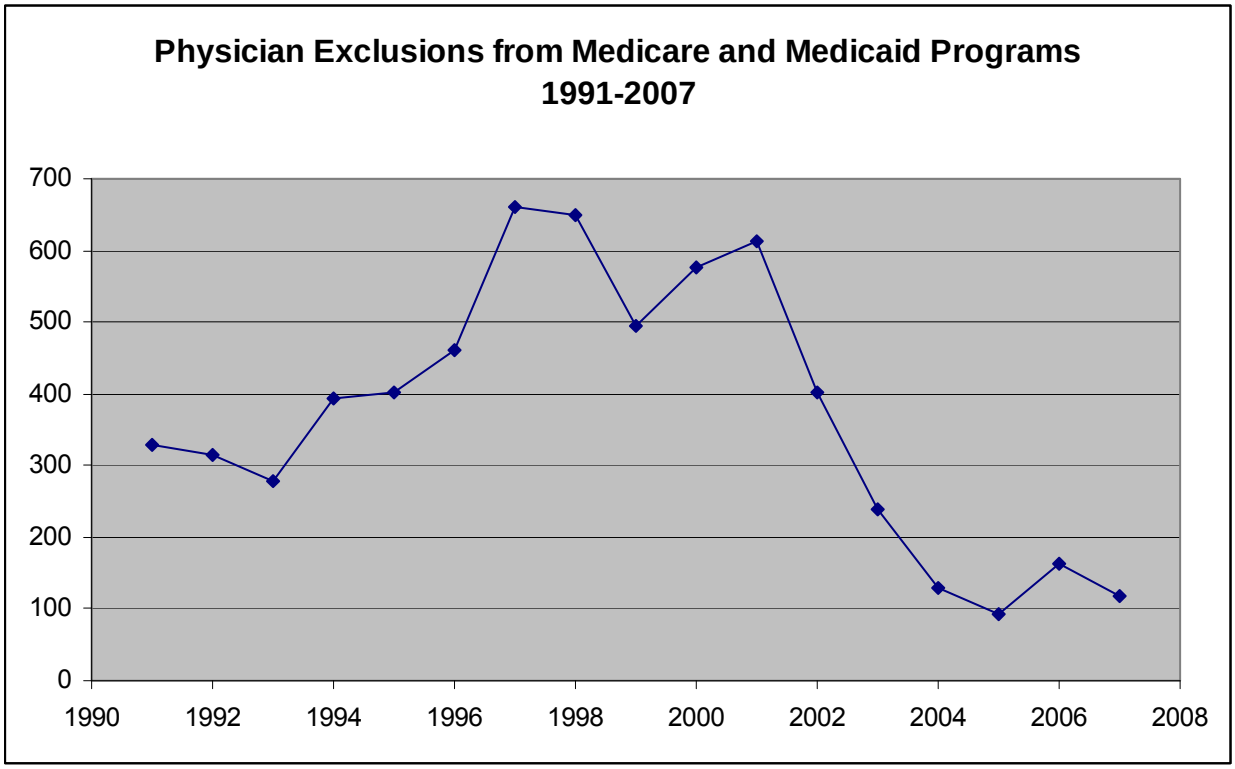

Figure 30. *PA Exclusions from Medicare and Medicaid Programs 1991-2007*

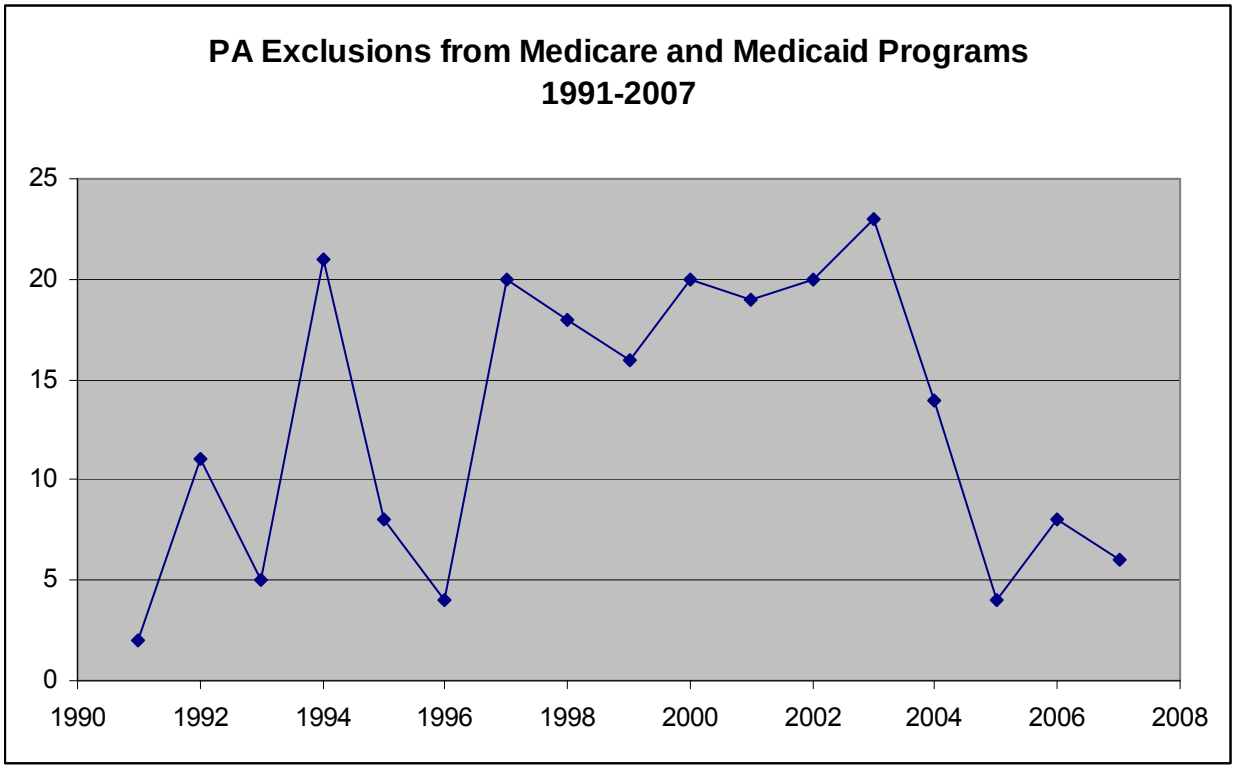

Table 38 displays U.S. D.E.A. actions for the 17 year study period. The 1,355 total D.E.A. actions were 2.1% of all adverse actions for the period. There were 1,352 D.E.A. actions against physicians in the period which constituted 0.17% of active physicians of 2006. There were two PA and one APN actions in the 17 year period. The results are not statistically significant due to the small proportion of adverse actions.

Table 38. *U.S. D.E.A. Actions for the Period January 1, 1991-December 31, 2007*

	Physicians	PAs	APNs	Total
U.S. D.E.A. Actions	1,352	2	1	1,355

Note: $\chi^2 = 22.79$; df =32; p=0.8847; effective sample size n=1,355 (results not significant as the proportion data is adverse actions is too small). Data field: NPDEARPT. Reported only providers involved at least one time with DEA action regardless of times (Physicians: 1,314 (1 time), 31 (2 times) and 7 (4 times)).

Table 39 and Figure 31 display D.E.A. actions by year for the full 17 year study period. The analysis revealed two peaks with the largest number of actions occurring in 1994 and 2004. The actions decreased to a low in 1998 and the again from 2004 to an all time low in 2007. There were two actions against PAs, one in 1999 and one in 2004. There was one action against an APN in 2004.

Table 39. *U.S. D.E.A. Actions by Year 1991- 2007*

Year	Physicians	PAs	APNs	Total
1991	65	0	0	65
1992	93	0	0	93
1993	111	0	0	111
1994	116	0	0	116
1995	86	0	0	86
1996	78	0	0	86
1997	62	0	0	62
1998	51	0	0	51
1999	63	1	0	64
2000	70	0	0	70
2001	71	0	0	71
2002	87	0	0	87
2003	122	0	0	122
2004	132	1	1	134
2005	72	0	0	72
2006	41	0	0	41
2007	32	0	0	32
Total	1,352	2	1	1,355

Figure 31. *Physician D.E.A. Actions 1991-2007*

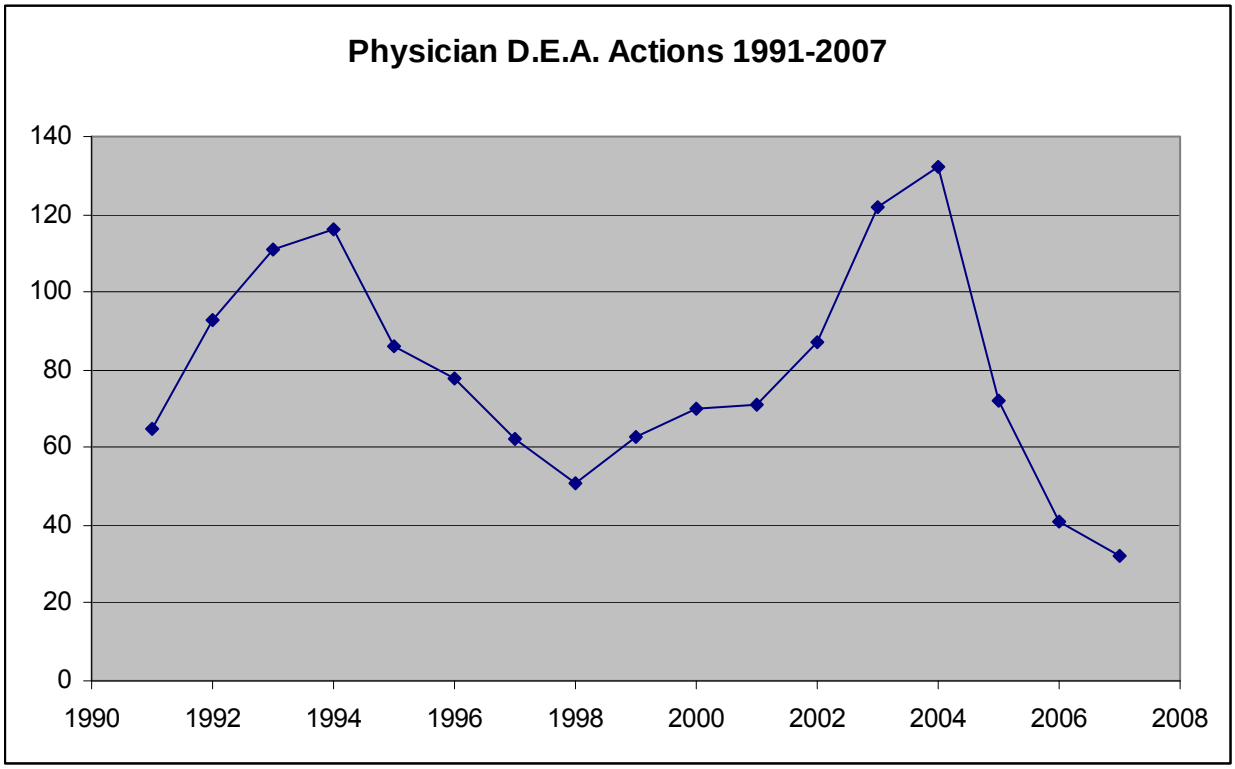

Table 40 displays D.E.A. actions ranked by state for the 17 year study period. The state with the largest number of D.E.A. actions was California, with more than double or 131% more than the state with the second most actions, Texas.

Table 40. *U.S. D.E.A. Actions by State, 1991-2007*

State	Physicians	PAs	APNs	Total
California	180	0	0	180
Texas	78	0	0	78
Ohio	57	0	0	57
Florida	51	0	0	51
Virginia	48	0	0	48
Louisiana	46	0	0	46
Massachusetts	45	0	0	45
Pennsylvania	44	0	0	44
Kentucky	34	0	0	34
Illinois	31	0	0	31
Georgia	30	0	0	30
Missouri	27	0	0	27
New York	27	0	0	27
Arizona	26	0	1	27
Iowa	26	0	0	26
Tennessee	25	0	0	25
Michigan	21	0	0	21
New Jersey	21	0	0	21
Nevada	20	0	0	20
Oklahoma	15	0	0	15
Colorado	14	0	0	14
Mississippi	13	0	0	13
West Virginia	13	0	0	13
Indiana	12	0	0	12
North Carolina	12	1	0	13
Utah	12	0	0	12
Montana	10	0	0	10
New Mexico	10	0	0	10
Wisconsin	10	0	0	10
Alabama	9	0	0	9
Arkansas	9	0	0	9
Maryland	8	0	0	8
Idaho	7	0	0	7
New Hampshire	7	0	0	7

Table 40. (*continued*)

State	Physicians	PAs	APNs	Total
Oregon	7	0	0	7
Kansas	6	0	0	6
Maine	6	0	0	6
District of Columbia	5	0	0	5
Nebraska	5	0	0	5
South Carolina	5	0	0	5
Puerto Rico	4	0	0	4
Connecticut	3	0	0	3
Hawaii	3	0	0	3
Minnesota	2	0	0	2
Alaska	1	0	0	1
Rhode Island	1	0	0	1
Washington	1	0	0	1
Armed Forces-Americas	--	--	--	--
Armed Forces-Europe	--	--	--	--
Armed Forces-Pacific	--	--	--	--
American Samoa	--	--	--	--
Delaware	--	--	--	--
Federated States of Micronesia	--	--	--	--
Guam	--	--	--	--
Marshall Islands	--	--	--	--
Northern Marianas	--	--	--	--
North Dakota	--	--	--	--
Palau	--	--	--	--
South Dakota	--	--	--	--
Virgin Islands	--	--	--	--
Vermont	--	--	--	--
Wyoming	--	--	--	--
TOTALS	1,047	2	1	1,050

Note: $\chi^2 = 339.38$; df =92; p<0.0001; effective sample size n=1,050. Data fields WORKSTAT & NPDEARPT (>0) with 1991<=AAYEAR<=2007).

Table 41 summarizes the adverse action reports by provider type for the study period. For physicians, the largest number of adverse actions were state and medical board licensing actions, followed by clinical privileges actions, and practitioner exclusions from Medicare and Medicaid programs. For PAs Medicare and Medicaid program exclusions were reported most. For APNs, only one DEA action was reported. A discussion of this table and all tables follows in Chapter V.

Table 41. *Adverse Actions Report Summary 1991-2007*

Adverse Action	Physician	PA	APN
State and Medical Licensing Board Actions	44,330	NA	NA
Clinical Privileges Actions	14,547	NA	NA
Professional Society Membership Actions	574	NA	NA
Practitioner Exclusions from M/M Programs	6,311	219	0
US DEA Actions	1,352	2	1

Note: NA= Not applicable as reporting was voluntary for PAs and APNs. M/M = Medicare and Medicaid.

Table 42 displays the number of actions for each provider group as a percentage of the total number of providers in that group in 2006. Table 42 indicated that 5.72% of the number of physicians of 2006 had state and medical board licensing actions in the 17 year study period. For PAs the highest proportion of adverse actions per provider was exclusions form Medicare and Medicaid programs. No program exclusions were reported for APNs. The adverse action affecting the greatest proportion APNs in the 17 year period was clinical privileges.

Table 42. *Adverse Actions 1991-2007 as a Percent of Providers of 2006*

Adverse Action	Physician	PA	APN
State and Medical Licensing Board Actions	5.721%	NA	NA
Clinical Privileges Actions	1.877%	NA	NA
Professional Society Membership Actions	0.074%	NA	NA
Practitioner Exclusions from M/M Programs	0.814%	0.344%	0.000%
US DEA Actions	0.174%	0.003%	0.001%

Note: NA=Not applicable as reporting was voluntary for PAs and APNs. M/M = Medicare and Medicaid.

Summary

Chapter IV presented a statistical analysis of data pertinent to the study available from the National Practitioner Data Bank in the Spring of 2008. Most data were available and analyzed for complete calendar years 1991-2007. The majority of the data for analysis came from the NPDB public use file, some of it was provided by the NPDB staff. For those tables that required demographic data, the best available demographic data was utilized, with disclaimers or precautions noted where appropriate. The analyses using chi-square and ANOVA (Sheffe) showed statistically significant associations and differences in malpractice payments and adverse actions between physicians, PAs and APNs. Analyses also revealed statistically significant differences between states on the number of malpractice payments and adverse actions and differences between states of adverse actions as a proportion of the number of malpractice payments. The analyses also revealed differences in the amount of malpractice payment by gender. Possible reasons for these statistically significant differences will be discussed in the

next chapter. The reader is again cautioned to bear in mind the role, autonomy and malpractice risk differences between the three provider types when formulating opinions.

CHAPTER V

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Introduction

Chapter V discusses the study findings in a systematic fashion with reference to the tables and figures presented in Chapter IV. Questions are raised where appropriate, limitations are expressed throughout and conclusions are drawn where possible. Where conclusions are uncertain or based upon assumptions, appropriate questions are raised and recommendations made for further research. The end of the chapter contains a final summation of study findings and discusses study implications for education policy and health care policy, practice and research. Finally, recommendations are provided specifically to educational leaders, the PA profession, training programs and to future researchers of the physician assistant profession and patient safety.

Discussion

Malpractice and Adverse Action Incidence

The summary data presented in Tables 6 and 7 indicated statistically significant associations in malpractice payments and adverse actions between physicians, PAs and APNs. Table 6 revealed that physicians had the highest number of malpractice payments and adverse actions. PAs had more adverse actions, but less malpractice payments than APNs. Caution must be taken when interpreting the total of adverse action reports because three of the five categories of adverse actions studied were voluntarily reported for PAs and APNs (each adverse action category will be discussed separately). Table 7 displayed the number of payment reports, providers involved, and ratio of providers per report. The number of providers involved was higher than the number of malpractice payments because multiple providers were involved in

some payments. For example, a physician and PA or physician and APN could be involved in the same payment. Physicians had 1.10 reports per provider, PAs had 1.24 reports per provider and APNs had 1.26 reports per provider. This means that 10%, 24% and 26% of each provider group respectively had another provider involved in the malpractice payment. It is reasonable to note that PAs and APNs had a greater percentage of other providers involved in payments because they would frequently be named along with their supervising or collaborating physician in malpractice litigation. Interpreting the data in this way, if we assumed that the other provider involved was the supervising physician, 76% of PAs and 74% of APNs had malpractice judgments or settlements when their supervising/collaborating physicians did not. However, it is possible that the supervising/collaborating physicians also made a malpractice payment for the same case as a mid-level provider but was reported separately. If the difference were known, then it would be possible to estimate the frequency that PAs and APNs are found negligent when their supervising or collaborating physician is not.

Average Age of Provider and Time in Practice at Time of Report

Table 8 revealed the average age in years of the three provider types at the time of the malpractice report or adverse action. Physicians were older at the time of these events than both PAs and APNs. This may be due to the age affect of the practicing population of these provider types. Since both APNs and PAs are graduating at a much higher rate and are proportionately younger than physicians, the age difference is not surprising. A more revealing assessment was the mean year of practice at the times of these events as reported in Table 9. Table 9 revealed a statistically significant difference in mean years in practice at the time of the malpractice payment between physicians and PAs and physicians and APNs, but not between PAs and APNs. Physicians were in their practices longer on average than PAs or APNs, with mean of 25.2 years.

PAs were in practice an average of 15.1 years and APNs 18.7 years. We might conclude that physicians are less likely to be sued early in their careers than PAs or APNs. However, if the total workforce mean years in practice is greater for physicians, so will its mean years in practice for any benchmark or activity. Conversely, a larger proportion of PA and APN total workforce has been in practice a shorter length of time.

Durations Between Payment and Adverse Action and Between Litigation and Payment

A second observation from Table 8 was the difference in years between malpractice payments and adverse actions for all three provider types. There was a five, four and two year age difference respectively for the provider types between the time of the adverse action and malpractice report. This may be explained if there is an association between malpractice incident and adverse action. If we assume that a malpractice payment was justified and that an association exists between payment and adverse action taken by a licensing board or professional society, it is reasonable to conclude that time is required for review of provider conduct and for disciplinary action to be taken by reporting entities.

Table 14 revealed a statistically significant difference in the duration between litigation and malpractice payment between all three provider types. It suggested that it may take years from notice of suit to settlement or judgment. The average duration between these events was 4.2 years for physicians, 3.6 years for PAs and 3.8 years for APNs. The mean duration for all three provider types was 3.9 years. Since the NPDB requires reporting of payments only, not sits filed, this information is helpful in interpreting the data and analyzing trends.

Payments by Patient Age and Gender

Table 10 revealed a statistically significant association in patient age and gender across the three provider groups in malpractice claims for the period 1/31/2004 - 12/31/2007. Data for

other years was not available. These data may be interpreted to reveal a difference in the probability of litigation by gender. There were 47,457 patients involved in malpractice payments by physicians, including 26,483 females (56%) and 20,974 males (44%). Physician assistants and advanced practice nurses were involved with less than 2% of patients relating to malpractice payments. For PAs, 303 (48%) of female patients and 223 (52%) of male patients were involved in malpractice payment reports. For APNs, 536 (59%) of female patients and 359 (41%) of male patients were involved in malpractice payment reports. If we combine the three provider types, females comprised 56% of the total. These data may indicate that women are slightly more likely to litigate than men against their health care provider. However, it is also possible that women are more greater consumers of health care. A greater number of visits by women would skew the data towards more lawsuits from women patients. A more revealing study would be the gender difference in malpractice payments per health care provider encounter. This would control for patient gender. As the greatest difference between gender payments occurred with APNs who are predominantly women, it is also possible that women have a higher expectation or are more likely to litigate against fellow women. This possibility is also raised when we see that less women than men litigated against PAs who were predominantly male during the study period. According to the AAPA census reports, the proportion of actively practicing women PAs did not surpass male PAs until 2000. Another possibility to explain the high number of female patients involved in APN payments is that APNs have proportionately more women patients. The inclusion of nurse midwives in the APN data and a high proportion of nurse midwives in the APN data would support this explanation. Further exploration of the differences in malpractice litigation by women against female and male providers would make an excellent follow up study.

Reason for Malpractice Payment

Tables 11 and 12 reported medical malpractice payments by reason for payment and provider type. These tables may be interpreted to demonstrate the main reasons for malpractice payments. The analysis revealed a statistically significant association across the three provider types. The top five reasons reported for malpractice payments among physicians were diagnosis (33.9%), surgery (27.1%), treatment (18.0%), obstetrics (8.6%), and medication related (5.5%). The top five reasons among PAs were diagnosis (55.5%), treatment (24.6%), medication related (8.5%), surgery (4.6%), and miscellaneous (3.1%). For APNs, the top five reasons for payments were anesthesia (38.7%), obstetrics (22.2%), diagnosis (14.8%), treatment (10.5%), and medication related (4.8%). Anesthesia and obstetrics were higher ranking reasons (first and second) for payments among APNs. This is likely due to the greater proportion of APNs than PAs employed in these areas. If these two reasons were excluded, the ranking of the top four PA and APN reasons for payment would be the same: diagnosis, treatment, medication, and surgery. Anesthesia and obstetrics ranked seventh and eighth for PAs as few PAs work in anesthesia and obstetrics compared with APNs. According to the 2007 AAPA census, only 0.3% of PAs were employed in anesthesia and 2.4% in obstetrics/gynecology (AAPA, 2007).

The issue of differences in litigation and malpractice payments with specialty becomes apparent in this table. It is not currently possible to control for specialty with data from the NPDB. The best comparison of malpractice incidence and payments between provider types would be made by comparing the incidence between providers working in the same medical specialty.

Medication-Related Payments by Reason for Payment

Table 13 revealed medication-related medical malpractice payments by reason for payment for the data dates available, January 1, 2004 - December 31, 2007. The most common type of medication errors were the same for all three provider types. In order of frequency these were: a) improper management of medication regimen and; b) improper technique. Other common errors were consent issues, failure to order appropriate medication, wrong medication ordered, wrong dosage of the correct medication and consent issues. Administration of medication errors was ranked third for PAs and APNs and a distant eighth for physicians. This may reflect the fact the PAs and APNs administer medication orders themselves more frequently than physicians. Physicians historically delegate the administration of medications to nurses.

Malpractice Payment and Gender

Table 15 displayed the mean and median payment for malpractice reports by gender for the full 17 year study period. These data were provided separately by the NPDB staff and is not a part of the public use data file. The data showed that female providers, regardless of type of provider, had larger malpractice payments on average than male providers. Female providers also had higher median malpractice payments for physicians and APNs. Median malpractice payment was slightly lower for PAs. Both the average and median payments for female practitioners was higher than that for males when provider types were combined. Not only were women patients more likely to litigate against women providers as noted in Table 10, we now see that the amount of malpractice payment made by women providers was also higher on average than their male colleagues. Gender has been revealed as factor in these findings and should be further explored in future studies. Speculation as to why women providers make higher payments might include a greater willingness than men to admit medical errors or fault

and a lack of desire to prolong litigation. Either of these dispositions could lead to higher settlements. The researcher cautions that these comments are speculation and that further research on this topic is in order.

Rate of Malpractice and Adverse Action Incidence

Table 16 and Figures 4-15 reveled a statistically significant association in malpractice reports and adverse action reports by year for all three provider groups and presented the percent change in reports by year from 1991-2007. While percent change is useful, given the small numbers of PA and APN reports compared to physicians, both percent and absolute number changes were reported. The year with the largest number of physician malpractice reports was 2001. Physician malpractice reports remained fairly consistent between 1991 and 2003 and then saw a decrease from 2003 to 2007. Physician malpractice reports were also seen to be on a steady downward slope from 2003-2007. The overall slope of physician malpractice incidence reports between 1991 and 2007 was flat (-0.2% change in number of reports per year). The number of PA malpractice reports saw a continual increase peaking at 135 in 2004 with a jump from 81 in 2001 to 123 in 2002. PA reports have decreased from 2004 to 2007. However, the overall slope of PA malpractice incidence reports from 1991 to 2007 indicated an average change of 12.13% per year, indicating an upward trend. The number of APN malpractice reports was fairly consistent from 1991 to 2000 hovering between 90 and 140 but then saw a large increase from 111 in 2000 to 183 in 2001and increased again in 2004, 2005, and 2006 (from 168 in 2003 to 264 in 2006). The overall slope of APN malpractice incidence reports from 1991 to 2007 indicated a 7.42% average increase in reports per year, showing an upward trend similar to PAs. The slopes for PA and APN malpractice incidence should not be over-interpreted as the actual number of reports was comparatively small to that of physicians.

The largest percent change in malpractice reports for physicians was a decrease in 1995 of 11.4%, for PAs was an increase in 2002 of 51.1% and for APNs an increase in 2001 of 61.3%. The comparison in physician malpractice reports between 1991 and 2007 was a decrease of 1900 reports or 14.2%. The average number of reports for the 17 year period was 14,512. The comparison of PA malpractice reports between 1991 and 2007 was an increase of 80 and the average number of reports over the period was 72. The comparison in APN reports between 1991 and 2007 was an increase of 137 and the average number of reports for the period was 153.

The analysis was clear that litigation and malpractice payments for PAs and APNs from 1991 to 2007 have been rising overall, and for both provider types especially since 2000. In contrast, the number of physician malpractice reports has been steady overall and has been on a downward slope since 2003. The overall slope for the provider types combined is flat but skewed by the comparatively large number of physician reports.

This researcher believes there are two main probable explanations for the increase in total number of PA and APN malpractice payments. First, there are many more mid-level providers entering the workforce. The number of active mid-level providers has increased at a rate over this time period that approximates the rate of increase in malpractice payments. The workforce of PAs and APNs increased significantly from 1991 to 2007. The number of active PAs went from 20,628 in 1991 to 68,124 in 2007, a 230% increase (AAPA, 2008). Extrapolation from nursing survey reports conducted by the U.S. Health Resources and Services Administration (HRSA) in 1992 and 2004 indicate that the number of APNs in the workforce rose by approximately 143% between 1991 and 2007, from 118,761 to 288,960 (U.S. HRSA, 1992; 2004). Combined, the increase in PA and APN practitioners from 1991-2007 was 156%. The overall increase in malpractice payments for PAs and APNs from 1991 to 2006 was 176% (123

in 1991 to 340 in 2007). This figure is close to the 156% percent increase in the PA and APN workforce. According to data from the U.S. Bureau of Labor Statistics (U.S. BLS), the number of physicians increased by only 14.8% between 1991 and 2006 (U.S. BLS, 2008). This helps explain why the incidence of malpractice reports for physicians has remained comparatively steady. Second, if the slopes for PA and APN malpractice incidence were increasing compared to physicians, it could be attributed to the fact that PAs and APNs are being held more independently accountable for their provision of medical care as the professions mature. As mentioned in the literature review, treatment of PAs by the courts as separately liable from their supervising physicians is evolving. Only recently have some states adopted regulations requiring peer review of malpractice claims against PAs and NPs.

It is unknown why PA malpractice payments have seen a decrease since 2004 in 2005 and 2007, although this is consistent with the downward physician slope in that time period. PAs are more closely tied to their supervising physicians than APNs in that a PA's supervising physician is indisputably liable for their PAs actions, and they commonly share the same malpractice insurance policy. PAs and physicians are inextricably linked by practice regulations and state laws. This does not hold true for APNs whose legal relationship with and liability of collaborating physician are not as clear and which vary by state.

Regarding adverse action reports, the year with the largest number of physician adverse actions was 1998 with 4971 reports. Physician adverse action reports were fairly consistent between 1991 and 2007 with an overall flat slope. The number of PA adverse action reports was fairy inconsistent but did show an overall upward slope peaking in 2003 with an overall decrease from 2003 to 2007. The number of APN adverse action reports saw low numbers of one to seven reports from 1991 to 2002 but then a large increase in 2003 and 2004 with a peak of 21 in 2004.

The APN reports increased from 5 in 2002 to 21 in 2004. The number decreased in 2005, 2006 and 2007. The largest percent change in adverse action reports for physicians was a decrease in 2007 of 11.6%, for PAs was an increase in 1997 of 175% and for APNs an increase in 2001 of 133% followed by increases in 2003 of 120% and 2004 of 90%. The total change in physician adverse action reports from 1991 to 2007 was an increase of 235 reports or 6.7% and the average number of reports was 4,315. The total change in PA adverse action reports from 1991 to 2007 was an increase from 6 to 14 or 133% and the average number of reports for the period was 18. The total change in APN reports from 1991 to 2007 was an increase of 1 to 8 or 700% and the average number of reports was 106.

Similar to malpractice payments, the number of adverse action reports for PAs and APNs has seen an increase over the 1991-2007 study period while physician reports have remained fairly steady. This researcher believes the same reasons noted above are responsible for this difference. Also similar to malpractice payments, since 2003 the number of adverse actions has seen an overall decrease to 2007. However, that decrease is true for APNs as well as for PAs and physicians. Speculation for this decrease in recent years would include a less government intervention, less federally regulated approach to health care by a Republican presidential administration. Assuming a lag time between malpractice payments and adverse action reports similar to the lag time between litigation and payment report as noted in Table 14, the decrease in adverse actions since 2003 is consistent with the November, 2000 change in executive branch and political party administration. Another explanation might include a changing climate of health care reform where the vital role of health care providers may be more greatly appreciated.

Malpractice Payments and Adverse Actions by State of Practice

Table 17 revealed a statistically significant association in the number of malpractice payments and adverse actions by state of practice (work state) for the period 1991-2007 for all three provider types. The table was sorted by physician malpractice payment rank. The states with the highest number of malpractice reports for physicians were those with the largest populations and number of physicians: New York, California, Pennsylvania, Florida and Texas. The number of adverse action reports however, was not as connected to population. The states with the highest number of adverse actions in order of frequency were California, Texas, Ohio, Florida, and New York. Pennsylvania ranked much lower in its number of adverse actions even though it had the third highest number of malpractice payments.

The states with the highest number of malpractice payments for PAs were New York, Florida, Texas, California, Michigan and North Carolina while for APNs those states were Florida, Texas, New York, Pennsylvania and California. The states with the highest number of adverse action reports against PAs were New York and North Carolina while for APNs were Texas and Florida.

One might expect a correlation between the number of malpractice payments and the number of adverse actions taken against health care providers. That is, it is reasonable to hypothesize that providers who were found to be unsafe through the marker of malpractice payments would also have their ability to practice restricted in some way as observed through the incidence of adverse actions. The ratio of adverse action reports to malpractice payment reports may give an indication of states' effectiveness in protecting the public from unsafe providers. This ratio was provided in Table 18. The previously discussed duration between malpractice

payments and adverse actions against providers (lag time from payment to disciplinary action) extrapolated from Table 8 provided another indication of the validity of this correlation.

Ratio of Malpractice Payments to Adverse Action Reports

Table 18 provided the ratio and percentage of adverse action reports to malpractice payments by state over the 17 year study period. It compared the number of adverse actions taken against providers' ability to practice to the number of malpractice payments over the same period. This may be interpreted as an indication of how states are performing in restricting high risk or unsafe provider's ability to practice and in promoting patient safety. The table was displayed in rank order from highest percentage of adverse actions to malpractice payments to lowest. Averaging all states, the ratio of adverse action reports to malpractice payments was 4.4:1. Described another way, adverse action reports occurred 23% as frequently as malpractice payments. Some smaller jurisdictions and military jurisdictions had more adverse actions than malpractice payments, and two had no adverse actions at all. It is interesting to note that some of the states with the largest number of malpractice payments had lower than average adverse action sanctions. Pennsylvania and New York in particular had adverse action percentages that were three times lower than the average. This may indicate that they are not performing as well as other states in sanctioning unsafe providers.

Malpractice Payment Amount – Inflation Adjusted to 2008 Dollars

Table 19 displayed the inflation adjusted mean, median and total malpractice payments for the three provider types over the 17 year study period in 2008 dollars. The results revealed a statistically significant difference between all three provider types. The total malpractice payments for the 17 years for all providers exceeded 75 billion dollars. Physician assistant payments comprised 0.3% of the total and APN payments comprised 1.2% of the total. It is

interesting to note that the mean and median malpractice payment of APNs was higher than that for physicians. This may reflect that a higher proportion of APNs on average work in higher liability specialties than their PA and physician colleagues. Once again specialty comparisons would be appropriate if available.

The average and median APN payments were the highest at $350,540 and $190,898. The average and median physician payments were $301,150 and $150,821while the average and mean PA payments were $173,128 and $80,003. The physician adjusted mean payment was 1.74 times higher than PAs but only 0.86 that of APNs. The physician adjusted median payments were 1.89 times that of PAs but only 0.79 that of APNs. It is speculated that APN mean and median payments are higher than that of physicians and PAs because the proportion of APNs who work in the specialties of anesthesia and obstetrics is higher. The proportion of malpractice payments for nurse anesthetists (47%) and nurse midwives (25%) was 72% of total APN payments. Additionally, these two specialties have a higher incidence of mortality when errors occur, and mortality judgments are higher than morbidity judgments. That is, when something goes wrong in these specialties, it is more likely to result in death, and judgments or settlements in cases of death are generally higher than results of injury alone.

Table 20 displayed the mean, median and total malpractice payments by year for the study period for all three provider types adjusted for inflation to 2008 dollars. Statistical significance was preserved by year. Figures 16-26 demonstrate the trends in average, median and total malpractice payment amounts for the 17 year study period adjusted for inflation to 2008 dollars. Total, average and median payment amounts increased throughout the study period for all three provider groups. As previously noted the average and median payment amounts of APNs were higher than that of physicians and PAs. Physician payments comprised 98.9% of

total payments for the three provider groups during the study period. Physician total payment amount peaked in 2001 and 2003 and then declined each year since. PA total payment amount also peaked in 2003 and in 2006 but declined in 2007. APN total payments amount saw its first peak in 2003 but then continued an overall upward slope peaking again in 2005 and 2007. There were spikes in median payment for APNs in 2002 and PAs in 2003. Median payments for PAs and APNs have been decreasing overall since 2003.

Payment amounts must be viewed with reference to the number of malpractice reports. The decline in total physician and PA payment amounts from 2003 to 2007 is consistent with the decrease in the number of malpractice reports for that period. Possible explanations for the decrease in payment incidence have been discussed. The increase in APN total payment amount over the last several years is also consistent with increased APN malpractice incidence over those years. However, variability exists because the amount of malpractice settlement or judgment can vary widely depending on the severity of determined patient harm by attorneys or courts. A useful follow up study would be to examine the extent of malpractice related regulation or reform by state over the study period. Many states have been active in limiting the amount of damages awarded to patients for personal injury, others have instituted state funds to pay damages in excess of insurance limits. According to the NPDB Associate Director of Research and Disputes, there are currently ten states that have excess compensation funds (R. Oshel, personal communication, June 11, 2008). Yet other states have legislated that state governments themselves as defendants when damages exceed certain amounts, typically for judgments in excess of three million dollars.

More useful observations were made by looking at the trends in mean and median malpractice payments for the three provider groups over the 17 year study period. This was

displayed in Figures 16 and 17. When the slopes of mean malpractice payments were compared, physicians had a lower increase in inflation adjusted payments per year than PAs and APNs. Physician mean payment increased by $5620 per year over the study period while that of PAs increased by $8993 and APNs by $8706. While APN mean malpractice payments are higher than physicians and PAs, the payment amounts were increasing at a similar rate to that of PAs over the study period. When median payments are examined (Figure 17), the slope of the physician median payment is noted to be greater than that of PAs and APNs. Physician median payments demonstrated an annual increase of $6004, the median annual increase for PAs was $4611 and APNs $3065. The annual increase in median payment for APNs was the lowest of the provider groups over the study period.

Malpractice Payment Amount – Adjusted to 1991 Dollars

Table 21 displayed mean and median malpractice payments adjusted to 1991 dollars for the full 17 year study period. Average payment differences between Physician and PA, Physician and APN, PA and APN were significant with p-value <0.05 level using Scheffe's method. Dollar amounts for 1991 were chosen to make similar comparisons to the 1998 studies of Brock and Cawley discussed in Chapters II and V. As mentioned in Chapter II, Cawley's group, examining six years of data from the NPDB, found that the average malpractice payment of PAs was $55,241 while that of physicians was $139,581. Average physician payment was 2.53 times higher than that of PAs. The current study, examining 17 years of data, indicated that physician payments are still higher on average than PA payments, but only 1.75 times higher when adjusted to 1991 dollars. The median payment for physicians was 1.90 times higher adjusted. Average adjusted PA payments were $108,246 while average physician payments were $189,278. Median adjusted payments were $94,845 for physicians and $49,924 for PAs. The

narrowing of the gap between average payments between physicians and PAs from Cawley's study to the current one may be attributed in part to the larger number of PA payments now in the dataset. Only 24 payments were in the dataset in Cawley's work. The current study included 1,222 PA payments. It may also reflect that PAs overall are being held more accountable for their provision of care in the years subsequent to the earlier study. This is a reasonable assumption in that the courts have been gaining experience with the PA profession and defining PA level of accountability over time.

APN mean and median payments were higher than both physicians and PAs. The mean and median ratio of payment amounts adjusted for APNs to physicians were 1.16 and 1.25. The ratio of adjusted payments for APNs to PAs was more than double, 2.04 and 2.39. Again this may be explained by the larger proportion of APNs employed in specialties where mortality is high when errors occur.

Brock's work, based on data collected from 1991 to 1996, found that physician-related claims reported to the NPDB were 420 times that of PA-related claims (100,750 for physicians and 240 for PAs). The current study, examining 17 years of data, indicated that physicians now have only 200 times more claims than PAs (245,267 payment reports for physicians and 1,222 for PAs). This difference is attributable to the larger proportion of PAs in the workforce and a dataset that is more than twice as large, spanning more than twice the number of years.

Brock also noted that total physician claims in dollars from 1990-1996 were 946.6 times the total for PAs. The current study indicated that the total physician dollar claims paid (in 1991 adjusted dollars) is only 312 times that of PAs for the full 17 year study period ($46,376.24 million for physicians and $148.2 million for PAs from Table 21). Again the difference in total payments is attributable to the increased proportion of PAs in the health care workforce

compared to physicians and longer study period. It is also due to the fact that the average dollar amount of payments in the current study for PAs is much higher than it was in the earlier Brock study as noted above. However, if we look at the average malpractice payment amount we calculate similar slopes for physicians and PAs. The average PA payment is not increasing at a greater rate than that of physicians (Figure 16). We would therefore expect PA average payments to remain less than average physician payments into the future as long as the slopes remain similar. Additionally, when we compare the slopes of median payments between physicians and PAs (Figure 17), we note that the slope of PA median payments is less than that of physicians. This is further indication that PA average and median payments are not likely to reach of the level of physician payments in the near future.

Ratio of Payments by Provider Type

Table 23 displayed the ratio of malpractice payments per total number of providers in 2006 for each provider type. Average payment differences between Physician and PA, Physician and APN, PA and APN were significant with p-value <0.05 level. The most recent year that demographic data were available for all three provider groups was 2006. The ratios were 1:62, 1:563 and 1:1016 respectively. The number of malpractice payments does not necessarily equate the number of providers with payments because some providers may have had more than one malpractice payment in 2006 and more than one provider may have been identified with a single payment. If we could control for multiple payments by a single provider, the result would be a better approximation of malpractice payments per provider. Nevertheless, this table can be used to provide the payment to provider ratio in 2006 with that limitation noted. The data indicated that in 2006 PAs had a probability of making a malpractice payment that was 9.1 times less than physicians, and APNs had a probability that was 16.4 times less. Please note that the APN

demographic data included both active and non-active practitioners. Therefore the ratio of payments to APN may be misleadingly low. Also please bear in mind that physicians may assume inherently higher malpractice risk than PAs or APNs because of role differences and differences in autonomy. We may not conclude that PAs and APNs are safer providers of care than physicians with this analysis, only that they appear to have a lesser probability of making malpractice payments in 2006.

Table 24 provided the number of malpractice payments over the 17 year period per average number of active providers within the 17 year study period. This provided an estimate of the probability of malpractice payment by provider type in the 17 study period. Average payment differences between Physician and PA, Physician and APN, PA and APN were significant with p-value <0.05 level. The average number of active providers was calculated by averaging the number of active providers in each year of the study period. The estimated number of providers for years in which a survey was not taken was calculated by determining the annual difference between closest known years. There was one payment report for every 2.7 active physicians, one for every 32.5 active PAs and one for every 65.8 active and non-active APNs. In percent, 37% of physicians, 3.08% of PAs and at least 1.52% of APNs would have made a malpractice payment over the 17 year period. The analysis assumed one malpractice payment per provider. Again please note that the APN demographic data included both active and non-active practitioners. Therefore the ratio of payments to APN may be misleadingly low. Also please bear in mind that physicians may assume inherently higher malpractice risk than PAs or APNs because of role differences and differences in autonomy. We may not conclude that PAs and APNs are safer providers of care than physicians with this analysis, only that they appear to have a lesser probability of making malpractice payments over the 17 year study period.

Basis for Adverse Action Report

Table 25 displayed the most common bases for adverse action reports since reporting began in 11/22/1999 to 12/31/2007. The most common basis for action by reporting entities by far was a licensing action by federal, state or local licensing authorities for physicians and PAs. This was followed by unprofessional conduct, alcohol and other substance abuse, criminal conviction and narcotic violation. Since licensing actions may also themselves have occurred for reasons listed, it would be prudent to look at them independently of licensing actions. As such, the most common bases for action in order were unprofessional conduct, alcohol and other substance abuse, criminal conviction and narcotic violation. Unprofessional conduct is generally determined by state medical boards or state boards of nursing. Although not technically illegal, unprofessional conduct may include inappropriate relationships with patients, abuse in prescription writing, abuse of authority and any other actions that professional boards may deem inappropriate or unprofessional.

State and Medical Board Licensing Actions

Five adverse action types were reported to the NPDB; state and medical board licensing actions, clinical privileges actions, professional society membership actions, practitioner exclusions from Medicare and Medicaid programs, and D.E.A. actions. Tables 26 and 27 displayed state and medical board licensing actions for the 17 year study period. Of the five adverse action types taken against the three provider types, state and medical board actions represented the largest proportion (67%) of all actions taken. Using the 2006 active provider census data, 5.7% or 1 of 17.5 physicians had state and medical licensing board actions taken against them in the 17 year study period. Unfortunately, since data was only voluntarily reported

for PAs and APNs, that data was excluded from this study so no comparisons may be made at this time.

Table 28 displayed state and medical licensing board actions by state for the 17 year study period. The states with the largest number of actions taken against physicians were California, Texas, Ohio, Florida and Arizona. However, the states with the most adverse actions against physicians were not necessarily those with the most malpractice payments. New York had the highest number of malpractice payments, but ranked fifth in state and medical board licensing actions. Likewise Pennsylvania ranked third in malpractice payments but 20th in state and medical licensing actions. Table 29 compared the rank by state of the top twenty physician malpractice payments and medical licensing board actions. Arizona stood out as a state that ranked high in licensing board actions (fifth) compared to malpractice incidence (fifteenth). Pennsylvania stood out as a state that ranked low in licensing actions (twentieth) compared to its rank in malpractice incidence (third). The differences between frequency of malpractice reports and state and medical board licensing actions may be interpreted as an indicator of how well state licensing and medical boards are monitoring their physicians and sanctioning unsafe practice. This has already been discussed in the section examining total adverse actions.

Clinical Privileges Actions

Table 30 displayed clinical privileges actions for the 17 year study period. Clinical privilege actions were the second most common type of adverse action taken against providers constituting 22.3% of all adverse actions in the dataset. There were 14,547 actions reported against physicians constituting 1.9% of all active physicians in 2006. No comparisons may be made for PAs and APNs since that data were not a required reporting elements. Clinical privilege actions are distinct from state and medical licensing board actions in that they occur at the

hospital or clinic level. Health care professionals are not only regulated and monitored by state boards but also by their local work settings. In theory this should add a second level of protection for the public as consumers of health care.

Table 31 displayed clinical privilege actions by year for each year of the study period. The number of physician actions displayed a mild downward trend from 1991 to 1998, a mild upward trend from 1998 to 2004, and then a more moderate downward trend from 2004 to 2007. The number of PA actions has been quite small, not exceeding seven through 2002, but then reaching a high of 12 in 2006 with eight in 2007. There appeared to be an upward trend for PAs beginning in 2002, though the total numbers are small. Similar to PAs, the number of APN actions was quite low never exceeding 5 through 2002. A large increase occurred in 2003 and 2004 with drops again in 2005, 2006 and 2007. The numbers of PA and APN actions is too small to make any generalizations or conclusions. For physicians, however, the drop since 2003 is reflective of the drop in total adverse actions for this same time period and may reflect the political climate and similar reasons outlined above.

Table 32 displayed clinical privilege actions by state for the study period. California had the most clinical privilege actions for physicians. It also had 41% more actions for all providers than the next highest ranking state of New York and 44% more than Texas. The top five clinical privilege actions against physicians by state is similar to the top five state and medical board licensing actions with the exception of Arizona ranking fifth. As mentioned, Arizona's state licensing board may be a stronger regulatory body and patient advocate compared to its counterparts in other states. Arizona also ranked high in clinical privilege actions at tenth. It is possible that Arizona's state licensing board reputation and/or actions has encouraged the state's

hospitals and clinics to be more aggressive with their own clinical privileges actions. PA and APN data was excluded because is was only voluntarily reported.

Professional Society Membership Actions

Tables 33-35 displayed professional society membership actions. Only physician data were required for reporting. The number of actions against physicians decreased from 1991 through 1999 but has been increasing on average since then. High numbers of membership actions were expected for the larger states, but Oklahoma stood out as third ranking in number of actions. This suggests that Oklahoma has active and strong physician professional societies. No conclusions may be drawn for PA and APN actions since these were not required for reporting.

Exclusions from Medicare and Medicaid Programs

Table 36 displayed practitioner exclusions from Medicare and Medicaid programs. This was a reporting requirement for all provider types, and statistically significant differences were revealed with $p < 0.0001$. Exclusions from Medicare and Medicaid programs constituted 9.9% of all adverse actions reported in the database. There were 6,311 physicians excluded from Medicare and Medicaid Programs in the study period, or 0.81% of the active physician population of 2006. There were 219 PA exclusions or 0.34% of the active PA population of 2006. The physician and PA exclusions followed a similar longitudinal pattern over the study period. While 219 PAs were excluded from these federal programs, no APNs were. Discussion of the zero value for APNs in this category with NPDB staff, one probable cause mentioned is that Medicaid and Medicare exclusions for APNs may have been reported under the nursing data fields rather than APN fields. Exclusions from these federal programs is normally a consequence of billing irregularities. Physician assistants generally do not perform their own encounter and procedure coding upon which billing is based. It is possible that at least some of the PA

exclusions from these programs were based upon the PA's supervising physician exclusion. APNs are allowed more independent practice and billing than PAs in most states. The fact that no exclusions were reported raises the question of whether APNs were erroneously reported elsewhere in the database.

Table 37 displayed practitioner exclusions from Medicare and Medicaid programs by year for the full study period. For both physicians and PAs, the number of exclusions had an overall average increase till 2001 and 2002. In 2001 the number of physician exclusions from Medicare and Medicaid programs began to decline dramatically through 2007. PA exclusions declined dramatically in 2003 from 23 to an average of less than ten for the subsequent four years. The large decline in exclusions for both provider types from 2001-2003 follows a similar pattern for all adverse actions. Since Medicare and Medicaid programs are federally administered, it is reasonable to hypothesize that these declines may reflect a change in administration policy or political climate. This analysis was consistent with earlier findings and earlier comments are validated.

U.S. D.E.A. Actions

Table 38 displayed U.S. D.E.A. actions for the 17 year study period. Reporting of D.E.A. actions was required for all provider types, but the low proportion of total actions reduced statistical significance. Of the 1,355 total D.E.A. actions were 2.1% of all adverse actions for the period. There were 1,352 D.E.A. actions against physicians in the period which constitutes 0.17% of the number of active physicians of 2006. There were two PA and one APN actions in the 17 year period. The number of D.E.A. actions is quite small compared to all other actions. The concerns of the D.E.A. are also concerns of the state and medical licensing boards, medical staffs, professional societies and privilege committees of hospitals. It is quite likely that D.E.A.

actions are comparatively small because actions had already been taken against the offenders through these other monitoring and regulatory bodies. Another likely explanation is that APNs and PAs are not required by many states to maintain their own D.E.A. registrations. Although new pharmacy software requires D.E.A. numbers in order for prescriptions to printed with the PA or APN's name on the label, some mid-level providers may still prescribe using their supervising or collaborating physician's D.E.A. registration number for controlled substances.

Table 39 displayed D.E.A. actions by year for the full 17 year study period. The data revealed two peaks with the largest number of actions occurring in 1994 and 2004. The actions decreased to a low in 1998 and the again from 2004 to an all time low in 2007. There were two actions against PAs, one in 1999 and one in 2004. There was one action against an APN in 2004. Once again the pattern of decreased actions in the last four years is noted for physicians. This is another indication of the probability of a change in federal policy or political climate, and is consistent with a change in federal administration in the year 2000 and expected lag time to adverse action reporting. However, caution is advised in interpretation since n-value is low and statistical significance is not met.

Table 40 displayed D.E.A. actions ranked by state for the 17 year study period. The state with the largest number of D.E.A. actions was California, with more than double or 131% more than the state with the second most actions, Texas. Part of the high California D.E.A. actions may be attributed to its large physician population, but other factors must also be at work. Either California indeed had the greatest number of D.E.A. violations or its other regulatory venues did not do as good a job as other states in monitoring or disciplining providers with D.E.A violations.

Adverse Actions Summary by Provider Type

Tables 41 and 42 displayed a summary of the absolute number of adverse actions for each provider group from 1991-2007 and also as a percentage of the total number of providers in that group in 2006. The tables suggested that the largest number and proportion of adverse actions for physicians were state and medical licensing actions. Practitioner exclusions from Medicare and Medicaid programs most affected PAs. No program exclusions were reported for APNs even though this was a required reporting element. The staff of the NPDB believes that the lack of Medicare and Medicaid program exclusions for APNs reflects a reporting error (exclusions were reported as nurses rather than as APNs). The number of actions against PAs and APNs was too low to draw conclusions based on comparisons between the provider groups.

Summary and Conclusions

It was not the intent of this study to determine, define or quantify the differences in liability or malpractice risk between PAs and physicians or PAs and APNs. An undertaking of that sort would require a system for analyzing and quantifying role differences between the three provider groups and full spectrum variations in the level of autonomy PAs and APNs are provided when working with supervising or collaborating physicians. This study was solely intended to analyze retrospectively markers of unsafe medical practice and compare PA findings to those of physicians and APNs to determine if PAs are safe providers of medical care, or at least as safe as physicians and APNs based upon those markers.

Unless otherwise specified, statistically significant associations were found for every variable studied between PAs and physicians, APNs and physicians, and between PAs and APNs. The intent of this study was to answer the following questions: is the practice of medicine by physician assistants as safe as the practice of medicine by physicians and advanced practice

nurses? Specifically, research questions for this study included: (a) Do PAs negate their cost effectiveness through the costs of malpractice?; (b) Is the rate of malpractice for physician assistants at the same trajectory as that of physicians and advanced practice nurses?; (c) Is the ratio of malpractice claims per provider the same for physician assistants, advanced practice nurses and physicians?; and (d) Are the reasons for disciplinary action against PAs and APNs the same as those for physicians?

Answering the Study Questions

Based on the 17 year comparison of physician and PA malpractice incidence and average malpractice payments, it appears that PAs do not negate their cost effectiveness through the costs of malpractice when compared to physicians and APNs. Statistically significant differences existed between PA to physician and PA to APN malpractice incidence to provider ratios. The data suggested that the ratio of malpractice payments to PA was 1:32.5 while that to physicians was 1:2.7 and to APNs 1:65.8 over a 17 year period. In 2006, those ratios were 1:563 for PAs, 1:62 for physicians, and 1:1016 for APNs for that single year. Statistically significant differences were also found between PA and physician and PA and APN mean and median malpractice payments over the 17 year study period, adjusted for inflation to 2008 dollars. The mean physician payment was 1.74 times higher than the mean PA payment and the median payment was 1.89 times higher. The mean APN payment was 2.02 times higher and median payment was 2.40 times higher. These findings suggest that PAs may be a factor in malpractice cost savings for the health care industry.

The rate of malpractice incidence for PAs and APNs is increasing while the rate for physicians is flat, neither increasing nor decreasing as viewed over the 17 year period. This has been explained by the more than doubling in the number of PAs and APNs entering the

workforce over the study period and by the comparatively minor increase (14.8%) in number of active physicians during this period.

The reasons for disciplinary action against PAs and APNs are largely the same as for physicians. The three most common reasons included: a) licensing actions by federal, state and local licensing authorities; b) unprofessional conduct; and c) alcohol and/or other substance abuse. Additionally, all three provider groups received adverse actions reports of clinical privileges actions, narcotics violations and U.S. D.E.A actions. Practitioner exclusions from Medicare and Medicaid programs were reported for physicians and PAs.

This study has provided a comprehensive review of the data available in the National Practitioner Databank regarding physician, PA and APN malpractice incidence, malpractice payments and adverse actions that restrict or sanction clinical practice. It has updated and exceeded in scope the only studies previously undertaken in 1998 by Brock and by Cawley, et al. Those studies were limited not only by the few years of data available at the time but also in scope. The number of adverse actions was too small at that time to draw any meaningful conclusions. While adverse action numbers were still comparatively small for PAs and APNs and some actions were voluntarily reported, this study was able to identify trends in adverse actions and make trend comparisons between provider types.

This study also went beyond the studies of Brock and Cawley to include data on APNs, a similar yet competitive discipline to PAs, and a discipline to which PAs are often compared. APNs stood out in the study as having higher average malpractice payout amounts than PAs and even physicians. It was hypothesized that this was due to the high proportion of APNs in the dataset that are nurse anesthetists and midwives. APNs also stood out in that PA and physician total malpractice payouts have been decreasing in the last four years while APN malpractice

incidence and total monetary payouts have been on the rise. However, average and median APN malpractice payout amounts, while still higher than physicians, have been on the decline in the last few years. That is, there are more APN payouts, but the average and median payout amounts are declining.

The study revealed gender differences in litigation incidence and amount of malpractice payment. Through data available only from NPDB staff, this study suggested that female health care providers make larger malpractice payments on average than their male colleagues. It also suggested that female providers are slightly more likely than their male colleagues to be sued. There is also indication that more women bring malpractice claims then men, but this could be simply a factor of women as greater consumers of health care services. Although inconclusive, these findings suggest the need for further research on issues of gender in health care provision and patient safety.

A statistically significant difference was found in the number of years in practice before a malpractice payment was made between physicians and PAs and between physicians and APNs. Physicians were involved in clinical practice ten years longer on average than PAs and six years longer than APNs before making a malpractice payment. This may be largely a function of provider group average workforce years in practice.

There was an average of 3.9 years between malpractice payments and adverse action or disciplinary sanction by reporting entities.

Anesthesia and obstetrics were higher ranking reasons (first and second) for malpractice payments among APNs. This is likely due to the greater proportion of APNs than PAs and physicians employed in these areas. If these two reasons are excluded, the ranking of the top four PA and APN reasons for payment were the same: diagnosis, treatment, medication, and surgery.

The issue of differences in litigation and malpractice payments by clinical specialty became apparent in this study. It was not possible to control for specialty with data from the NPDB as specialty reporting was not required, so other research tools and data are necessary. This is an area where further research is recommended.

The number of malpractice payments and adverse action reports for PAs and APNs has seen an overall increase during the 1991-2007 study period while physician reports have remained fairly steady. This can be explained by provider demographics. However, malpractice payments and adverse actions since 2003 have seen a an overall decrease for all three provider types. It was hypothesized that a change in government policy or political climate may be responsible. Further exploration of this possibility is recommended. Decreases in Medicare and Medicaid program actions as well as decreases in D.E.A. actions since 2003 support the hypothesis that the overall decrease in adverse actions since 2003 may reflect a change in government policy or political climate.

Comparing to Brock's data, the study revealed that the per provider ratio of total malpractice payments between PAs and physicians is narrowing over time. This is explained by demographic factors.

The study indicated a statistically significant difference between physician and PA mean and median payments each year throughout the study period. Regarding trends, the study suggested that physician average payments over the 17 year period, in 2008 dollars adjusted for inflation, are 1.74 times higher on average than PA payments, and median payments are 1.89 times higher on average. The study also suggested that the average PA payment is increasing at a faster rate than that of physicians over time, but the median PA payment is decreasing over time compared to physicians. The slopes of the average physician and PA payments over the 17 year

study period indicate that physician average payment increase each year is less than that of PAs (a $5620 rise in average payment per year for physicians and $8993 rise per year for PAs), but the slope of median physician payments is greater than that of physicians ($6004 for physicians and $4611 for PAs). We therefore may expect that PA average payments may eventually intersect that of physicians, but median payments may continue to diverge. Since average and median payments appear to be headed in opposite directions, we cannot draw a definitive conclusion. Examination of the next several years of data will provide the answer.

States with the most adverse actions against physicians were not necessarily those with the most malpractice payments. Pennsylvania and New York, while ranking high in malpractice incidence, were found to have adverse action ratios that were three times lower than the average. That is, while states on average had about one adverse action for every 4.4 malpractice payments, these states had about one in thirteen. This could be an indication of their ineffectiveness at sanctioning unsafe providers.

Arizona stood out as a state that ranked high in licensing board actions (fifth) compared to malpractice incidence (fifteenth). Pennsylvania stood out as a state that ranked low in licensing actions (twentieth) compared to its rank in malpractice incidence (third). The difference between frequency of malpractice reports and state and medical board licensing actions may be an indicator of how well state licensing and medical boards are monitoring their physicians and sanctioning their practices. Arizona and Pennsylvania are opposites in this regard.

Oklahoma stood out as third ranking in number of professional society actions against physicians. This finding suggests that Oklahoma may maintain active and strong physician professional societies.

The state with the largest number of D.E.A. actions was California, with more than double the amount of Texas, the state with the second most actions.

Implications and Recommendations

Education of PAs, Physicians, and APNs

The introduction to this study referred to a nation in a health care system crisis due to spiraling costs, practitioner maldistribution, predicted practitioner shortages and insurance disparities with 40 million Americans who are uninsured. This study purports that the costs of malpractice are a significant contributing factor to the problem. This study has suggested that more than $74 billion (in 2008 dollars) have been spent on malpractice claims against physicians, PAs and APNs alone in the past 17 years. The costs of medical malpractice in the U.S. have underscored the need for improved medicolegal education for practitioners at all levels of training and experience. Training should begin with the development of a strong foundation in medicolegal education during the didactic portion medical education programs for all practitioners. While currently there is no data on medicolegal education in PA Programs with the exception of what is required by the accreditation standards, 124 medical schools report providing an average of 25 hours of instruction on "medical ethics" during the 4-year curriculum; no additional information is available regarding whether this includes specific medicolegal content (McAbee, Deitschel and Berger, 2006). The Committee on Medical Liability and Risk Management of the American Academy of Pediatrics (AAP) has begun to study the medicolegal education of physicians and has found it lacking. The author of the current study, having twelve years of PA program administration experience, concurs that medicolegal education of PA students falls short a desired emphasis, despite the implementation of the medicolegal accreditation standards discussed in the literature review. The author of this study agrees with the

recommendations of the of the AAP committee that a formal dedicated course in medical jurisprudence is desirable. Such a course should include topics such as principles of medical malpractice including the expert witness process; informed consent and refusal of care; overview of regulatory issues (e.g., Health Insurance Portability and Accountability Act of 1996, Occupational Safety and Health Administration regulations, Emergency Medical Treatment and Active Labor Act, Americans With Disabilities Act, Clinical Laboratory Improvement Amendments); fraud and abuse; good-Samaritan laws; patient incompetence; third-party liability; criminal prosecutions of health care providers; elder law; and issues related to genetics, reproduction, and technology. In addition, the procedural aspects of how a lawsuit develops (e.g., summons and complaint, discovery, deposition) are important to initiate students to the workings of the legal process. This alone can help start to assuage the fear that students have about the legal process. The effectiveness of such a course can be accentuated with lectures in relevant bioethics. If feasible, a mock trial could be implemented for introducing students to the operational aspects of a malpractice trial.

An AAP 2004 survey of graduating pediatric residents found that 76% of residents reported no instruction in expert-witness testimony; 76% reported no instruction in vaccine injury liability; 65% reported no instruction in the malpractice crisis; 57% reported no instruction in medical malpractice litigation; 54% reported no instruction in medical liability insurance; 50% reported no instruction in risk management/loss prevention; and 36% reported no instruction in risk communication (McAbee, 2006). The author of this study concurs that recent PA graduates might report similar results. Therefore recommendations are also in order for medicolegal education during the clinical components of physician, PA, and APN training. For physicians, this would occur during residency, for PAs during the typical twelve-month period of clinical

"rotations," and for APNs, during their clinical modules. Competencies for the clinical education portion of training should include risk management, informed consent, professional behavior, quality of care improvement, billing and coding, documentation, the use of technology in a medical practice, substance abuse prevention and management, and patient communication including apologizing for errors. The current study's review of the most common bases for adverse actions and malpractice claims supports these curriculum recommendations. Since medicolegal issues are complex, it is recommended that each educational program appoint a faculty member to oversee the curriculum for all phases of training.

Recommendations are also in order for practicing clinicians. Practitioners should encourage state professional organizations, hospitals, and medical schools to sponsor legal medicine seminars that are relevant to everyday practice. As previously described, the American Academy of Physician Assistants provides didactic sessions on medicolegal and risk management topics each year at its national continuing medical education conferences. State medical, nursing, and PA association chapters can also be invaluable in offering didactic medicolegal topics to its membership. As with all medical education, independent self-study should take place at all levels of experience. Malpractice insurers often provide a reduction in premiums for completion of risk-management courses. One valuable source for lecturers for both pre-service and in-service education includes hospital, malpractice insurance company and community attorneys, and risk-management specialists. This researcher is acutely aware of the challenges that program directors have when faced with adding topics to an already-expanded and concentrated PA curriculum. However, the importance of this issue must be acknowledged and better addresses because of the personal and professional impact that legal issues have on practitioners.

Practitioners should be willing to share malpractice experiences with students and colleagues. Since law is based on precedent; lawsuits will be filed if attorneys are aware that suits on specific issues have been successful. Providers must be willing to share their experiences, because we all can learn from the mistakes of others. Disclosure may decrease the chance of litigation and result in smaller awards if litigated and improve patient safety.

It is recommended that educators, whether faculty at academic institutions or community practitioner mentors, elevate the importance of, and increase their efforts in, medicolegal education. Future practitioners must be better prepared for practice, not only to reduce their own practice risk but to promote patient safety. If the focus of malpractice/risk management education is placed within the context of what is best for the patient, as are most other issues in medical education, the topics will be much better received and retained.

This study has provided essential information for the education of PAs, physicians and APNs. Training programs should incorporate study findings into their required medicolegal curricula. The study validated the decision of the Accreditation Review Commission on the Education of Physician Assistants to incorporate quality assurance, risk management, legal issues of health care and professional liability into the required standards of PA training programs. The American Academy of Physician Assistants, state PA professional chapters and their corresponding physician and APN colleague organizations would do well to disseminate the results of this study to their members, to employers, government agencies, and all stakeholders in the safety and cost effectiveness of medical care. These groups should incorporate study findings into their continuing medical education programs and publications. Also, practicing clinicians may now make better informed, research-based decisions on the necessity and amount of their malpractice insurance coverage.

Health Care Policy

The observations and conclusions from the analyses should be of value to a variety of stakeholders regarding patient safety and the delivery of safe medical care by physicians, PAs and APNs. Analyses of the data suggested that the utilization of physician assistants is and remains a safe choice for the provision of medical care when compared with physicians and APNs. Also when compared with physicians, the study found that utilization of PAs may actually decrease the costs of medical malpractice as indicated by lower PA malpractice incidence and average malpractice payments.

The study suggests that the cost of medical malpractice exceeded $74 billion (in 2008 dollars) in the last 17 years for physicians, PAs and APNs alone. Although the PA portion of this amount was the smallest, the study finding of $245 million in PA malpractice payments and the public concern of patient safety should provide ample cause for hospitals, clinics, government regulatory agencies to implement and maintain strong risk management and quality assurance programs. Professional societies have further indication of the importance of monitoring members and assisting those with competence and substance abuse issues.

Given the costs and risks to patients, disciplinary sanctioning or retraining of unsafe providers should be given high priority by health care policymakers. Additionally, government agencies and state professional societies need to examine why some states are doing a much better job than others at sanctioning unsafe providers. A further recommendation to policymakers is to include the comparatively young PA and APN professions in the mandatory reporting requirements of the NPDB. Three of five categories of adverse actions, including the most common type of adverse action affecting physicians, were not reporting requirements for

PAs and APNs. Only through mandatory reporting of all categories for all three provider types can accurate comparisons be made across these disciplines in all categories.

Research

This study has provided benchmarks for future researchers on the safety of physician, physician assistant and advanced practice nurse medical practice. It has made unique contributions to the fields of medicine, education, and law. No previous study of medical malpractice had comprehensively examined 17 years of data contained in the NPDB. No previous study had examined the effectiveness of states in sanctioning unsafe providers through a review of the frequency of actions intended to restrict the practices of providers with malpractice histories. No previous study had compared malpractice and adverse action data across three similar but distinct provider groups. And, no previous published study had noted gender differences in malpractice incidence and average amount of malpractice payments. This study has contributed fresh research on PA practice, as well as on physician and APN practice. It has provided new knowledge about the comparative safety of PA medical practice and benchmarks for future research. Through its numerous findings, some anticipated, some not, it has provided a solid research foundation for health care and education policy. Through its unexpected findings and limitations, it has raised a number of new questions, providing a basis for further exploration. Some questions this study has raised for future researchers include: Why do PAs appear to have lower malpractice incidence and payments than physicians and APNs?; What can be done to test the validity of these findings?; Is there a way to control for confounding factors such as variable role delineation and assumption of risk?; Why do female providers make higher malpractice payments than their male counterparts?; What are some states doing which make them appear more vigilant in taking adverse actions against unsafe providers?; Why does

there appear to be an overall downward trend in malpractice and adverse action incidence since 2003?; and What is currently being done and what more can be done in the education of physicians, PAs and APNs to reduce malpractice incidence and increase patient safety?

References

Accreditation Review Commission on Education for the Physician Assistant. (2007). *Accreditation Standards for Physician Assistant Education.* Retrieved on April 23, 2008 from http://www.arc-pa.org/Standards/3rdeditionwithclarifyingchanges10.07.pdf

Anderson, D. M., & Hampton, M. B. (1999). Physician assistants and nurse practitioners: Rural-urban settings and reimbursement for services. *Journal of Rural Health, 15*(2), 252-253.

Amara, R. (2000). Health and healthcare 2010: The forecast. In Engehart, J. K. (Ed.), *The institute for the future*. San Francisco: Jossey-Bass Publishers.

American Academy of Family Physicians. (2008). *Guidelines on the supervision of certified nurse midwives, nurse practitioners and physician assistants*. Retrieved July 7, 2008 from http://www.aafp.org/online/en/home/policy/policies/n/nonphysicianproviders.html

American Academy of Physician Assistants (AAPA). (2000). *2000 annual census.* Retrieved on May 7, 2007, from http://www.aapa.org/research/intro2000.html

American Academy of Physician Assistants (AAPA). (2004). *Trends in the physician assistant profession: 1991-2003*, Division of Data Services and Statistics, January, 2004.

American Academy of Physician Assistants. (2006). *2006 annual census.* Retrieved May 7, 2007, from http://www.aapa.org/research/05census-intro.html

American Academy of Physician Assistants. (2007). Retrieved October 4, 2007, from http://www.aapa.org/geninfo1.html

American Academy of Physician Assistants. (2008). Retrieved April 23, 2008, from http://members.aapa.org/aapaconf2008/Sessions.asp?CatName=CME

American Academy of Physician Assistants. (2008). *Total number of PAs, new PAs, accredited PA programs reporting new graduates, and PAs in clinical practice at year's end, select years, 1991-2007.* Unpublished document provided by the Division of Data Services and Statistics. Sent electronically, July 15, 2008.

Association of Physician Assistant Programs (2000). *Report of the ad hoc committee on the master's degree*. Presented at the semi-annual meeting of the Association of Physician Assistant Programs, Chicago, IL.

Beasley, J. W. (2005). Quality of work life of independent vs. employed family physicians in Wisconsin: a WReN study. *Annals of Family Medicine*, *3*(6), 500-506.

Becker, W. E. (1992). Why go to college: The value of an investment in higher education. *Higher Education, 25*, 91-120.

Bergeron J., Neuman K., & Kinsey J. (1999). Do advanced practice nurses and physician assistants benefit small rural hospitals? *Journal of Rural Health, 15*(2), 210-211.

Braxton, K., Poe, K. & Stimmel, S. (2007). Disclosure of medical errors is honesty the best policy legally. Retrieved April 4, 2007, from http://www.sorryworks.net/article26.phtml

Brock, R. (1998). The malpractice experience: How PAs fare. *Journal of the American Academy of Physician Assistants.* Retrieved January 20, 2007, from http://www.jaapa/com/issues/j19980600/j6a093/html

Bryant-Lukosius, D., & Dicenso, A. (2004). A framework for the introduction and evaluation of advanced practice nursing roles. *Journal of Advanced Nursing, 48*(5), 530-540.

Burns, P. G. (1993). Master's degree nursing education: State of the art. *Journal of Professional Nursing, 9*(1), 204-08.

Burns, L. R. (1995). Medical organization structures that promote quality and efficiency: Past research and future considerations. *Quality Management in Health Care, 3*(4), 10-18.

Carter, R. (1992). Sociocultural origins of the PA profession. *Journal of the American Academy of Physician Assistants, 5*(9), 655-662.

Carter, R. & Strand, J. (2000). Physician assistants. A young profession celebrates the 35th anniversary of its birth in North Carolina. *North Carolina Medical Journal, 6*(5), 249-256.

Cawley, J. F., Rohors, R., & Hooker, R. S. (1998). Physician assistants and malpractice risk: findings from the National Practitioner Data Bank. *Federation Bulletin, 85*, 242-247.

Charles, S. C., Gibbons, R. D., Frisch, P. R., et al. (1992). Predicting risk for medical malpractice claims using quality-of-care characteristics. *Western Journal of Medicine, 157*(4), 433-439.

Collins, W. J. (2003). The political economy of state-level fair employment laws, 1940-1964. *Exploration is Economic History, 40(*1), 24.

Counselman, F. L., Graffeo, C. A., & Hill, J. T. (2000). Patient satisfaction with physician assistants (PAs) in an ED fast track. *The American Journal of Emergency Medicine, 18* (6), 661-665.

Crane, S. C. (2007). PAs at the crossroads: Where will the profession go next? *Journal of the American Academy of Physician Assistants.* Retrieved February 3, 2007, from http://jaapa.com/issues/j20070901/articles/editorial0907.html

Davidson, J. D. (1996). A look at leading malpractice risk issues. *Journal of the American Academy of Physician Assistants, 6*(3), 23-24.

Donabedian, A. (1966). Evaluating the quality of medical care. *Milbank Memorial Fund Quarterly, 44*(1), 166-203.

Donabedian, A. (1988). The quality of care: How can it be assessed ? *Journal of the American Medical Association, 260*(12), 1743-48.

Donabedian, A. (1992). The Lichfield lecture. Quality assurance in health care: Consumers' role. *Quality in Health Care, 1*(4), 247-251.

Donabedian, A., White, K. L., Frenk, J., Ordonez-Carceller, C., Paganni, J. M., et al. (1992). Evaluating the quality of medical care. *International Journal of Health Services, 23*(3), 603-605.

Druss, B. G., Marcus, S. C., & Olfson, M. (2003). Trends on care by nonphysician clinicians in the United States. *New England Journal of Medicine, 348,* 130-137.

Frankel, R. M. (1995). Communicating with patients: Research shows it makes a difference. *American Academy of Physician Assistants News, 16*(2), 8.

Gara, N. (2007). *Apologizing for adverse outcomes*. Policy paper of the Government Affairs and Reimbursement Committee of the AAPA, presented at the AAPA annual meeting, Philadelphia, PA.

Gardner, D. B. (1998). Effects of conflict types and power style use among health professionals in interdisciplinary team collaboration. Ph.D. dissertation, George Mason University, United States -- Virginia. Retrieved May 3, 2007, from ProQuest Digital Dissertations database. (Publication No. AAT 9821693).

Garner, B. (Ed.). (1999). *Black's Law Dictionary* (7th ed.). Eagan, MN: West Publishing.

Gustafson, D. H., & A. S. Hundt. (1995). Findings of innovation research applied to quality management principles for health care. *Health Care Management Review, 20*(2), 16-33.

Henson, B. (1977). Returns to a specific graduate education. *The Journal of Nontraditional Studies, 2*(2), 134-44.

Hollowell, E. E., De Ville, K. A., & Warner, M. (2006). Physician liability for the acts of others. *Health Law Matters.* Retrieved February 5, 2007, from http://www.nchealthlaw.com/mla17.html

Hooker, R. S., Potts, R., & Ray, W. (1997). Patient satisfaction: Comparing physician assistants, nurse practitioners, and physicians. *The Permanente Journal, 1*(1). Retrieved January 21, 2007, from http://xnet.kp.org/permanentejournal/sum97pj/ptsat.html

Hooker, R. S. (2000). The economic basis of physician assistant practice. *Physician Assistant, 24*(4), 51-55.

Hooker, R. S. and Cawley, J. F. (2003). *Physician assistants in American medicine* (2nd. ed.). St Louis, MO: Churchill Livingstone.

Hunter, T. D. (2003). *Outpatient community clinic patients' perceptions regarding nurse practitioner services.* Unpublished doctoral dissertation, University of Utah College of Nursing, Salt Lake City.

Jio, S. (2005). What the want ads don't say. *Health, 19*(4), 116.

Kachalia, A., Studdert, D. M. (2004). Professional liability issues in graduate medical education. *Journal of the American Medical Association, 292,* 1051-1056.

Kane, R. A., & Kane, R. L., (1988). Long-term care: variations on a quality assurance theme. *Inquiry, 25*(1), 132-46.

Kaplan, S. H., Greenfield, S., Gandek, B., et al. (1996). Characteristics of physician with participatory decision-making styles. *Annals of Internal Medicine, 12*(5), 497-504.

Keogh, J. K. (1997). Professionalization of nursing: Development, difficulties, and solutions. *Journal of Advanced Nursing,* 25(1), 302-308.

Kohlhepp, B., Rohrs, R., & Robinson, P. (2005). Charting a course to competency. *Journal of the American Academy of Physician Assistants, 18*(7), 14-5.

Kohn, L., Corrigan, J., & Donaldson, M. (Eds.). (2000). *To Err is human: Building a safer health system*. Washington, D.C.: National Academy Press.

Larson, H. et.al. (2003). The contribution of nurse practitioners and physician assistants to generalist care in Washington State. *Health Services Research, 38*(4), 1003.

Lentz, M. E. (1985). *Congruency of nurses' perceptions of responsibility and accountability with professional expectations for clinical practice.* Doctoral dissertation, University of Pittsburgh, United States -- Pennsylvania. Retrieved May 4, 2007, from ProQuest Digital Dissertations database. (Publication No. AAT 8602806).

Lester, G. W. & Smith, S. G. (1993). Listening and talking to patients. A remedy for malpractice lawsuits? *Western Journal of Medicine, 158*(3), 268-272.

Manion, K. (2005). Finding physician fulfillment. *Physician Executive*, *3(*5), 32-35.

Massachusetts Board of Registration in Medicine (2007). *Definition of "Disciplinary Action" (243 CMR 3.02).* Retrieved March 9, 2007, from http://www.massmedbaord.org/data_repository/disciplinary_definition.shtm

Masselink H. F. (1997). Role concepts and role expectations of professionals in hospitals. *Social Science and Medicine, 12*(4), 198-204.

McAbee, G., Deitschel, C., & Berger, J. (2006). Pediatric medicolegal education in the 21st century. *Pediatrics*, *117*, 1790-1792.

Moses, R. E., & Feld, A. D. (2007). Physician liability for medical errors of nonphysician clinicians: Nurse Practitioners and Physician Assistants. *The American Journal of Gastroenterology, 102*, 6-9.

National Commission on the Certification of Physician Assistants. (2008). Retrieved on April 23, 2008, from http://www.nccpa.net/CME_requirements.aspx

National Practitioner Data Bank. (2006). *Annual report*. U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Office of Workforce Analysis and Quality Assurance, Practitioner Databanks Branch. Retrieved on December 12, 2006, from http://www.npdb-hipdb.hrsa.gov/annualrpt.html

National Practitioner Data Bank. (2007). *Guidebook.* U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Office of Workforce Analysis and Quality Assurance, Practitioner Databanks Branch. Retrieved on April 15, 2007, from http://www.npdb-hipdb.hrsa.gov/npdbguidebook.html

National Practitioner Data Bank. (2008). *Public Use Data File.* U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions, Office of Workforce Analysis and Quality Assurance, Practitioner Databanks Branch. Retrieved on March 24, 2008 from http://www.npdb-hipdb.hrsa.gov/publicdata.html

Nelson, W. (1997). CEOs influencing hiring decisions. *Healthcare Executive, 12*(5), 48.

Pan, S., Geller, J. M., Muus, K. J. et al. (1996) Predicting the degree of rurality of physician assistant practice location. *Hospital and Health Services Administration*, *41*, 105-119.

Physician. (2007). *In Merriam-Webster Online*. Retrieved April 21, 2007, from http://www.m-w.com/cgi-in/dictionary

Physician Assistant third fastest-growing profession. (2004, March 3). *Medical News Today.* Retrieved on April 16, 2007, from www.medicalnewstoday.com/articles/6929.php

Physician Assistant History Center. (2007). *Illustrated history of the PA profession*. Retrieved on March 3, 2007, from http://www.pahx.org/illusHist.htm

Pozgar, G. P. (2007). *Legal aspects of health care administration.* (10th ed). Sudbury, MA: Jones and Bartlett Publishers.

Regan, J. J. & Regan, W. M. (2002). Medical malpractice and respondeat superior. *Southern Medical Journal, 95*(5), 545-548.

Roblin, D. W. et al. (2004). Use of midlevel practitioners to achieve labor cost savings in the primary care practice of an MCO. *Health Services Research, 39*(3), 607.

Roblin, D. W., Becker, E. R., Adams, K., Howard, D., & Blumberg, M. S. (2001). Patient satisfaction with primary care: Effects of patient, visit, and medical care organization characteristics. *Academy of Health Services Health Policy Meeting, 18,* 198. Retrieved January 12, 2007, from http://gateway.nlm.nih.gov/MeetingAbstracts/102273550.html

Rosenthal, J. & Both, M (2004). The Flood Tide Forum; State Patient Safety Centers: A new approach to promote patient safety. *National Academy for State Health Policy.* Retrieved April 8, 2008, from http://www.nashp.org/Files/final_web_report_11.01.04.pdf

Roth-Kauffman, M. (2006). *The Physician Assistant's Business Practice and Legal Guide.* Sudbury, MA: Jones and Bartlett.

Shafrin, J. (2006a). Physician assistant timeline. *Healthcare Economist.* Retrieved on April 12, 2007, from http://healthcare-economist.com/2006/04/18/physician-assistant-timeline

Shafrin, J. (2006b). Physician assistant data. *Healthcare Economist.* Retrieved on May 3, 2007, from http://healthcare-economist.com/2--6/04/26/physician-assistant-data

Shi, L. (1994). A rural-urban comparative study of nonphysician provides in community and migrant health centers. *Public Health Reports, 109*(6), 809-16.

Sibthorpe, B. (2004). *A proposed conceptual framework for performance assessment in primary health care, a tool for policy and practice.* Australian Primary Health Care Research Institute. Retrieved March 12, 2007, from http://www.anu.edu.au/aphcri/Publications/conceptual_framework.pdf

Simon, A. F. & Link, M. S. (2001). *17th annual report on physician assistant educational programs in the United States, 1999-2000.* Alexandria, VA: Association of Physician Assistant Programs.

Staton, F. S., Bhosle, M. J., Camacho, F. T., Feldman, S. R. & Balkrishnan, R. (2007). How PAs improve access to care for the underserved. *Journal of the American Academy of Physician Assistants, 20*(6), 32-34.

Thompson, V. (1997). *Relationship between perceived physician/nurse collaboration and work satisfaction.* M.S.N. dissertation, Bellarmine College, United States -- Kentucky. Retrieved May 3, 2007, from ProQuest Digital Dissertations database. (Publication No. AAT 1384649).

Treadwell, D. (1999). Employer expectations of newly-hired communication graduates. *Journal of the Association for Communication Administration, 28*(2), 87-99.

U.S. Bureau of Labor Statistics. (2008). U.S. Department of Labor, *Occupational Outlook Handbook, 2008-09 Edition*, *Physicians and Surgeons.* Retrieved May 20, 2008 from http://www.bls.gov/oco/ocos074.htm

U.S. Bureau of Labor Statistics. (2008). U.S. Department of Labor. Retrieved July 8, 2008 from http://www.bls.gov/oes/oes_ques.htm#Ques10

U.S. Environmental Protection Agency. (2004). *Industry guidance, general risk management program guidance.* Retrieved on March 23, 2007, from http://oig.hhs.gov/fraud/docs/complianceguidance/042803pharmacymfgnonfr.pdf

U.S. Department of Health and Human Services, Health Resources and Services Administration. (1992). *The registered nurse population: Findings from the 1992 national sample survey of registered nurses.* Downloaded June 8, 2008, from ftp://ftp.hrsa.gov/bhpr/nursing/samplesurveys/1992sampsur.pdf

U.S. Department of Health and Human Services, Health Resources and Services Administration. (2004). *The registered nurse population: Findings from the 2004 national sample survey of registered nurses.* Downloaded June 8, 2008, from http://bhpr.hrsa.gov/healthworkforce/rnsurvey04/

U.S. Department of Health and Human Services. (2006). *Health, United States, 2006 with chartbook on trends in the health of Americans*. Centers for Disease Control and Prevention (CDC), National Center for Health Statistics. Retrieved on April 3, 2007 from http://www.cdc.gov/nchs/data/hus/hus06.pdf

Wikipedia. (2008). *Chi-square test.* Retrieved July 18, 2008 from http://en.wikipedia.org/wiki/Chi-square_test

Younger, P., Connor, C., Kinney-Cartwright, K., Kole, S., & Forsyth, J. (1997). *Physician Assistant Legal Handbook*. Gaithersburg, MD: Aspen Health Law Center.

APPENDIX A

Clinician Data Fields

Physician

10 Physician (MD)

15 Physician Intern/Resident (MD)

20 Osteopathic Physician (DO)

25 Osteopathic Physician Intern/Resident(DO)

Physician Assistant

642 Phys. Asst., Allopathic

645 Phys. Asst., Osteopathic

Advanced Practice Nurse

110 Nurse Anesthetist

120 Nurse Midwife

130 Nurse Practitioner

135 Advanced Practice Nurse

141 Clinical Nurse Specialist

APPENDIX B

Adverse Actions Data Fields

Licensure Actions

1110 Revocation of License (Individual)

1125 Probation of License (Individual)

1135 Suspension of License (Individual)

1138 Summary/Emergency Limitation/Restriction on License

1139 Summary/Emergency Suspension of License.

1140 Reprimand or Censure of License (Individual)

1144 Reprimand, Censure, Voluntary Surrender of License (Individual)

1145 Voluntary Surrender of License (Individual)

1146 Voluntary Limitation/Restriction on License (Individual)

1147 Limitation or Restriction on License/ Practice (Individual)

1148 Denial of License (Renewal Only) (Individual)

1172 Administrative Fine/Monetary Penalty (Licensure) (Individual)

1173 Publicly Available Fine/Monetary Penalty (Licensure) (Individual)

1199 Other Licensure Action

1280 Licensure Restored or Reinstated (Complete)(Individual)

1282 License Restored or Reinstated(Conditional)(Individual)

1283 License Restored or Reinstated (Legacy Report)(Individual)

1285 License Restoration or Reinstatement Denied (Individual)

1295 Reduction of Previous Licensure Action (Individual)

1296 Extension of Previous Licensure Action (Individual)

Exclusions from Federal and State Government Programs

1500 Debarment from Federal Programs (Individual)

1505 Exclusion from Federal Health Care Program (Individual)

1507 Exclusion from a State Health Care Program (Individual)

1508 Excl. from Medicare, Medicaid & all Other Fed. Programs. (Individual)

1509 Exclusion from Medicare & State Health Care Programs (Individual.)

1515 Reinstatement (Exclusion) (Individual)

1516 Reinstatement Denied (Exclusion)(Individual)

Clinical Privileges Actions

1610 Revocation of Clinical Privileges/Panel Membership (Individual)

1630 Suspension of Clinical Privileges/Panel Membership (Individual)

1632 Summary/Emergency Suspension of Clinical Privileges/PM (Individuals)

1634 Voluntary Limitation/Restriction/Rdct Clin Priv/Panel Member Investigation

1635 Voluntary Surrender of Clin. Priv/Panel Member. Under Investigation (Individual)

1636 Voluntary Acceptance of Restrictions on Privileges

1640 Reduction of Clinical Privileges/Panel Membership (Individual)

1645 Other Restriction of Clinical Priv/Panel Membership (Individual)

1650 Denial of Clinical Privileges (Individual)

1680 Clin. Priv. /Panel Member Restored/Reinstated (Complete) (Individual)

1681 Clin. Priv/Panel Member Restored/Reinstated (Conditional) (Individual)

1689 Clinical Privileges/Panel Membership Reinstatement Denied (Individual)

1690 Reduction of Previous Action (Clin Priv/Panel Membership) (Individual)

1695 Extension of Previous Action (Clin Priv/Panel Membership) (Individual)

1699 Reversal of Previous Clin Priv/PM Action, Appeal or Review (Individual)

Professional Society Actions

1710 Revocation of Professional Society Membership (Individual)

1730 Suspension of Professional Society Membership (Individual)

1745 Other Restriction/Limitation on Prof. Soc. Membership (Individual)

1750 Denial of Professional Society Membership (Subsequent) (Individual)

1780 Professional Society Membership Reinstated (Complete) (Individual)

1781 Professional Society Membership Reinstated (Conditional) (Individual)

1789 Professional Society Membership Reinstatement Denied (Individual)

1790 Reduction of Previous Action (Prof Soc Membership) (Individual)

1795 Extension of Previous Action (Prof Society Membership) (Individual)

1799 Reversal of Previous Prof Soc Action, Appeal or Review (Individual)

APPENDIX C

Basis for Action Data Fields

01 Alcohol and/or Other Substance Abuse

03 Narcotics Violation

05 Fraud (Unspecified)

06 Insurance Fraud (Medicare and Other Federal Gov. Program)

07 Insurance Fraud (Medicaid or Other State Gov. Program)

08 Insurance Fraud (Non-Government or Private Insurance)

09 Fraud in Obtaining License or Credentials

10 Unprofessional Conduct

11 Incompetence

12 Malpractice

13 Negligence

14 Patient Abuse

15 Patient Neglect

16 Misappropriation of Patient Property or Other Property

19 Criminal Conviction

20 Mental Disorder

22 Advertising or Marketing Services or Products That Are Discriminatory, Misleading, False, or Deceptive

29 Practicing Beyond Scope of Practice

30 Allowing Unlicensed Person to Practice

31 Noncompliance with Health and Safety Requirements

32 Lack of Appropriately Qualified Professionals

34 Financial Insolvency

39 License Action by Fed., State, or Local Licensing Authority

40 Exclusion/Suspension from Fed or State HC Program

41 Entities Owned/Controlled by Sanctioned Individual

42 Individuals Controlling Sanctioned Entities

43 Employing/Contracting With Individual Excluded From Fed/St HC Program

44 Default on Health Education Loan or Scholarship Obligations

45 Failure to Maintain Records or Provide Medical, Financial or Other Required Information

46 Failure to Grant Immediate Access

47 Failure to Take Corrective Action

48 Failure to Obtain Surety Bond

49 Failure to Comply w/ Composition of Enrollment Requirements

51 Failure to Perform Contractual Obligations

52 Incompetence, Malpractice, Negligence (Legacy Format Reports.)

53 Failure to Provide Med Reasonable or Necessary Items/Services

54 Furnishing Unnecessary or Substandard Items/Services

55 Improper or Abusive Billing Practices

56 Submitting False Claims

57 Fraud, Kickbacks and Other Prohibited Activities

58 Imposition of Civil Money Penalty or Assessment

59 Peer Review Organization Recommendation

60 Felony Conviction Related to Health Care Fraud

61 Felony Conviction Re: Controlled Substance Violation

62 Program-Related Conviction

63 Conviction Re: Patient Abuse or Neglect

64 Conviction Re: Fraud

65 Conviction Re: Obstruction of an Investigation

66 Conviction Re: Controlled Substances

69 Criminal Conviction, Not Classified

71 Conflict of Interest

74 Violation of Federal or State Antitrust Statute

75 Violation of Drug-Free Workplace Act

76 Violation of Immigration & Nationality Act Employment Provisions

77 Viol. of ADA or Applicable Federal and State Laws

78 Viol. of Civil Rights Act or Applicable Fed and State Laws

80 Physical Impairment

81 Misrepresentation of Credentials

82 Debarment from Federal or State Program

83 Hospital Privileges Restricted, Suspended or Revoked

91 Noncompl. W. Priv. Accred. Standards

92 Noncompl. W. Private Accreditation Standards That Pose a Substantial Risk to the Safety of Patient Care or Quality of Health Care Services

99 Other (Not Classified)

A1 Failure to Meet the Initial Requirements of a License

A2 Failure to Comply with Continuing Education or Competency Requirements

A3 Failure to Meet Licensing Board Reporting Requirements

A4 Practicing Without a Valid License

A5 Violation of or Failure to Comply with Licensing Board Order

A6 Violation of Federal or State Statutes, Regulations or Rules

A7 Surrendered License to Practice

A8 Clinical Priv. Restricted, Suspended or Revoked by Another Hospital or Health Care Facility

A9 Failure to Meet or Comply w/ Contractual Obligations or Particular Requirements

AA Failure to Comply with Corrective Action Plan

AB Practicing Beyond the Scope of Privileges

AC Failure to Maintain Equipment/Missing or Inadequate Equipment

AD Surrendered Clinical Privileges

B1 Nolo Contendre Plea 09

C1 Failure to Obtain Informed Consent

C2 Failure to Comply with Patient Consultation Requirements

C3 Breach of Confidentiality

D1 Sexual Misconduct

D2 Non-Sexual Dual Relationship or Boundary Violation

D3 Exploiting a Patient for Financial Gain

E1 Insurance Fraud (Medicare, Medicaid or Other Insurance)

E2 Providing or Ordering Unnecessary Tests or Services

E3 Filing False Reports or Falsifying Records 09/09/2002

E4 Fraud, Deceit or Material Omission in Obtaining License or Credentials

E5 Misleading, False or Deceptive Advertising or Marketing

F1 Immediate Threat to Health or Safety

F2 Unable to Practice safely by Reason of Alcohol or Other Substance Abuse

F3 Unable to Practice Safely by Reason of Psychological Impairment or Mental Disorder

F4 Unable to Practice Safely by Reason of Physical Illness or Impairment

F5 Unable to Practice Safely

F6 Substandard or Inadequate Care

F7 Substandard or Inadequate Skill Level

F8 Failure to Consult or Delay in Seeking Consultation w Supervisor/Proctor

F9 Patient Abandonment

FA Inappropriate Refusal to Treat

FB Excessive Malpractice Cases/Extensive Malpractice History

FC Negligent Credentialing

G1 Improper or Inadequate Supervision or Delegation

G2 Allowing or Aiding Unlicensed Practice

H1 Narcotics Violation or Other Violation of Drug Statutes

H2 Unauthorized Prescribing of Medication

H3 Unauthorized Dispensing of Medication

H4 Unauthorized Administration of Medication

H5 Error in Prescribing, Dispensing or Administering Medication

H6 Diversion of Controlled Substance