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NP activities in the United States: Practice and research

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Abstract

The nurse practitioner (NP) movement has been active in the United States for almost 50 years and has not been without challenges. The role of the NP is integral to the U.S. health care system. Nurse practitioners have overcome many challenges to practice and continue to move toward full scope of practice in all 50 States. To demonstrate the value and position of nurse practitioners in helping to meet the health care needs of the U.S. population, evaluation of NP practice or measuring NP outcomes is mandatory. In this paper, the speaker discusses the status of NP activities in the United States in the areas of practice and research, which are linked to NP education.

Keywords
nurse practitioner, advanced nursing practice, United States, nurse practitioner outcomes, nurse practitioner education, nurse practitioner regulation

1. Introduction to advanced nursing practice in the United States

1. 1 Definition

Many countries follow the definition for the advanced practice nurse developed by The International Council of Nursing (ICN 2009):

> "A Nurse Practitioner/Advanced Practice Nurse is a registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A master's degree is recommended for entry level."

This definition is clear that each country must prepare nurses for the advanced practice role based on their country's health care system, general and nursing education system, and laws and regulations regarding practice. Each country must modify the role characteristics to fit within the context of their country (Schober and Affra 2006). In this paper, I will discuss the current state of practice for advanced practice registered nurses (APRNs) in the United States (US), particularly the nurse practitioner (NP); analyze the challenges to full practice authority; and identify future trends in NP education, practice, and research.

1. 2 NP role development in the US

Several factors influenced the development of the NP role in the US. Among some reasons were a primary care physician shortage with a trend towards medical specialization among physicians, unique needs within special populations that logically fit with existing public health nursing services, a health care system that shifted the emphasis from illness to prevention and primary health care, the women's movement for equal opportunities, consumer movement demanding better care, and the passage of federal Nurse Training Acts that funded the education of NPs (Pohl et al 2010a, Sullivan-Marx et al 2010). Today the U.S. health care system is burdened by increasing costs of providing care; inadequate numbers of provider of all types, especially NPs, physicians, and physician assistants in primary care; growing numbers of uninsured and underinsured populations, such as the elderly and the homeless; and the expanding access to health care services because of the Patient Protection

and Affordable Care Act (ACA) of 2010; and once again, a greater focus on health promotion and disease prevention. Current priorities are to improve the quality of care patients receive, to improve access to care for all, to contain costs by providing more effective care more efficiently. New models of care, which are integrating NPs, are being tested.

Nurse practitioners have a strong history of providing health care services to special populations as safety-net providers for those with limited or no resources: the vulnerable (children, elderly), underserved (inner city, rural), uninsured (poor, working poor), and at-risk (mentally ill, immigrant) (Pohl et al 2010a, Sullivan-Marx et al 2010). A look at the characteristics of APRNs in the US provides insight into how important their contributions are in determining the health of the nation's people.

2. Advanced practice registered nurses

Of over 3 million registered nurses in the US in 2008, 8.4% or 250,527 were APRNs (U.S. Department of Health and Human Services [HHS] 2010). In the US, four roles are recognized for APRNs − NP, certified nurse midwife (CNM), certified nurse anesthetists (CNA), and clinical nurse specialist (CNS). Table 1 shows the number of APRNs by the designated role. NPs represent the largest group with more than 158,000, but numbers vary slightly depending on the data source.

2. 1 NP practice statistics

A 2012 survey of NPs found several interesting facts (Health Resources and Services Administration [HRSA] 2014). Of the number of licensed NPs, an estimated 60,407 were practicing in primary care in 2012. Table 2 indicates the estimated NP supply in 2012 by number, time period, and practice in primary care. Looking at the time period, the number (46.6%) in primary care since 2008 was less than the number had been before 1992 (59.1%). NPs, like physicians, shifted slightly more towards specialty practice. The principal setting for NP practice was in ambulatory care (56.7%), while the setting with the most on-site physician presence was the hospital (71%) and the least on-site physician presence was long-term and elder care (12%) (Table 3). The greatest number of NPs providing direct patient care (48.1%) were in primary care settings (Table 4). Listed in Table 5 are activities, usually associated with physicians, that NPs who provide direct

Table 1. Number of advanced practice nurses by role

Role	Estimated Number
Nurse Practitioner - NP	158,348
Certified Nurse Midwife - CNM	18,492
Certified Registered Nurse Anesthetist - CRNA	34,821
Clinical Nurse Specialist - CNS	59,242

HRSA (2010), National Sample Survey of Registered Nurses 2008

Table 2. Estimated NP supply in 2012 by number, time period, and practice in primary care

Employment Category	Number
Licensed NP	154,057
NP workforce	132,368
NPs providing patient care	127,210
NPs working in primary care	60,407

Time Period	1992 or earlier	2008 or later
	Per cent	
Primary Care	59.1	46.6
Internal Medicine & Pediatrics	10.2	16.8

HRSA (2014), 2012 National Sample Survey of Nurse Practitioners

Table 3. Setting for principal NP position and on-site physician presence

Principal Setting	Per cent of primary care NPs in setting	Settings with physician present at least 76% of the time
Ambulatory	56.7	56%
Hospital settings	31.6	71%
Long-term and elder care	4.7	12%
Public or community health	2.1	34%
Academic	5.0	46%
Total for all settings	------	56%

HRSA (2014), 2012 National Sample Survey of Nurse Practitioners

patient care reported performing. These activities included: conduct physical examinations and obtain medical histories (83.9%); prescribe drugs for acute and chronic illnesses (80.4%); and diagnosing, treating, and managing acute illnesses for most of their patients (68.3%). Performing office procedures was the least common activity reported. The American Association of Nurse Practitioners (AANP) provides the most current statistics for NPs (AANP 2014a). The average number of years of practice was 12.8 with a mean age of 49 years for NPs, and the family NP still represented the largest population focus (48.9%) (Table 6). Kaplan et al (2012) described the national distribution of NPs based on tracking of National Provider Identification (NPI) numbers. Findings indicated that NPs were more likely to practice in rural areas in states with greater practice authority than in restricted states.

Table 4. Specialty/facility for NPs providing patient care

Type of Practice	Per cent
Primary care	48.1
Internal Medicine subspecialty	13.3
Surgical subspecialty	8.8
Pediatric subspecialty	3.1
Psychiatry/Mental Health	5.6
Other	20.0
No specialty	1.3

HRSA (2014), 2012 National Sample Survey of Nurse Practitioners

Table 5. Services provided by NPs providing direct patient care

Service	Provided to Most Patients - %
Counsel & educate patients and families	85.6
Conduct physical exams & obtain medical histories	83.9
Prescribe drugs for acute & chronic illnesses	80.4
Order, perform & interpret lab tests, x-rays, EKGs, and other diagnostic studies	75.4
Diagnose, treat, and manage acute illnesses	68.3
Diagnose, treat, and manage chronic illnesses	60.9
Provide preventive care including screening & immunizations	55.0
Provide care coordination	53.3
Make referrals	46.1
Perform procedures	26.2

HRSA (2014), 2012 National Sample Survey of Nurse Practitioners

2. 2 Challenges to NP practice: Legislative authority

Individual State laws and regulations determine the scope of practice for NPs in the US. Currently, 19 states and the District of Columbia have full practice authority; 19 states have reduced authority; and 12 states have restricted authority (AANP 2014b). Full practice refers to the NP's ability, under state licensing and regulatory laws, to evaluate patients, diagnose, order and interpret diagnostic tests, and initiate and manage treatments, including prescribe medications, under the exclusive licensure of the state board of nursing. With reduced practice, at least one element of NP practice is limited and the state requires a collaborative agreement with an outside health discipline, usually a physician, in order for the NP to provide patient care. With restricted practice, limitations are the same as with reduced practice with the additional burden of the state requiring supervision, delegation, or team-management by an outside health discipline (AANP 2014b).

Besides state laws, barriers to the full potential of the NP workforce include payment policies. Many insurers exclude NPs from their panel of providers or reimburse NPs at lower rates than physician reimbursement. A limited capacity to bill and be paid for services provided places NPs at a disadvantage and marginalizes them in the health care system. Professional tensions

Table 6. Characteristics of NPs by population focus

Population Focus	Percent of NPs	Mean Years of Practice	Mean Age in Years
Acute Care	6.3	7.7	46
Adult+	18.9	11.6	50
Family+	48.9	12.8	49
Gerontological+	3.0	11.6	53
Neonatal	2.1	12.2	49
Oncology	1.0	7.7	48
Pediatric+	8.3	12.4	49
Psych/Mental Health	3.2	9.1	54
Women's Health	8.1	15.5	53

+ Primary care focus
AANP (2014a), *NP Facts*

surrounding collaboration, professional organizations, and education exists. States vary on the degree of involvement be that is mandated by law between a NP and a physician, from direct supervision to independent collaboration. Conflict among members of professional organizations and between different organizations creates confusion about the NP role, challenges acceptance of NPs as autonomous providers, and creates processes that restrict NP practice. Questioning whether NP preparation − education and training is sufficient enough to warrant full practice authority feeds opposing viewpoints. Requiring a master's degree now for eligibility to become certified is one standard that ensures a minimum level of competency (Naylor and Kurtzman 2010, Pohl et al 2010b).

The foremost solution to resolving some issues is to remove State and other practice restrictions. Allowing NPs to practice to the full extent of their education and training would increase access to care for many individuals in need of health care services, who are currently not receiving care. Other strategies to remove barriers to practice for NPs are to equalize reimbursement and payments, increase nurses' accountability, address professional tensions, fund increased primary care pathways, create innovative practice models including NPs, and to conduct more research on the NP role and NP outcomes achieved in the health care system (Naylor and Kurtzman 2010, Pohl et al 2010b). Do NPs make a difference in meeting the needs of the population?

2. 3 Innovative practice models

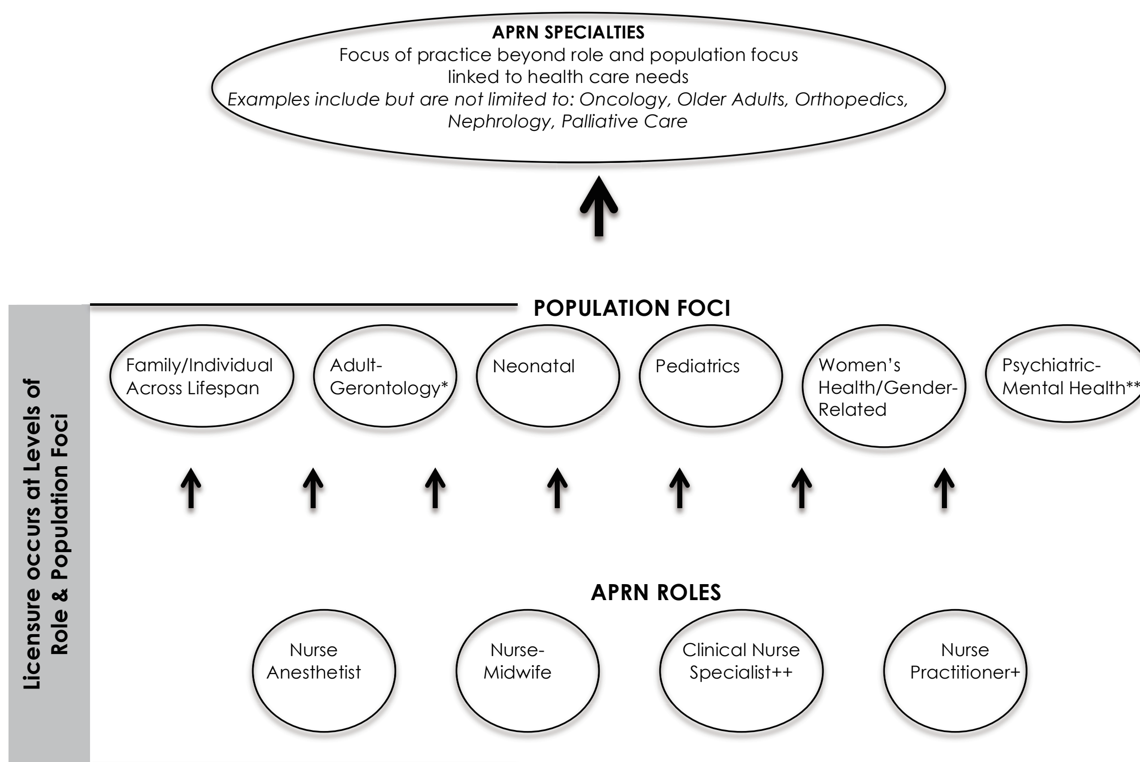
Historically, nurse managed health centers (NMHCs) have provided service to vulnerable populations. Many were started in academic centers (schools of nursing) with federal and foundation grant funding, staffed by faculty NPs. Services were provided either free or at very low cost. Other NMHCs have been established in schools, churches, community facilities, or anywhere there was a need. Sustainability has always been a challenge, however, and many NMHCs do not succeed over time. Other innovative practice models are patient centered medical homes (PCMH) where patients receive coordinated care among a group of health professionals, having all health needs met through one health system. This model is particularly being promoted through the ACA. Convenience clinics set up in retail stores have become popular; pharmacies are usually located within the same store. These clinics offer non-traditional hours of access, making them convenient at off hours and particularly during evenings and weekends when people may not have to work. Most convenience clinics are staffed by NPs and provide a range of services for acute and preventive care collaboratively with community primary care providers. Another model, the integrated care model, promotes behavioral health and primary care within the same system. Most effective is co-location of these two services facilitating consultation and referral between specialties. Entrepreneurship, or NP independent ownership of a practice, has been an achievable

option for many ambitious NPs who find a niche to fill in a particular community or with a special population. Practice or business management is a much desired skill being taught in NP programs today (Pohl et al 2010a). Nursing as a profession adapts to change in the health care system and creates new ways to provide high quality care in an interprofessional environment.

3. New model for APRN practice

3. 1 Consensus model

In 2008, multiple nursing organizations convened and endorsed a new model for advanced nursing practice (APRN Joint Dialogue Group 2008). See Figure 1 that depicts the APRN Regulation Model or APRN Consensus Model that recognizes only four APRN roles, six population foci, and designated specialties. Regulation addresses licensure, accreditation, certification, and education (LACE). Licensure is determined by individual state legislatures who adopt laws and set regulations that determine NP scope of practice. Accreditation is awarded to academic programs from national nursing organizations, reflecting approval overall of the nursing programs relative to curriculum, implementation and evaluation



+ The certified nurse practitioner (CNP) is prepared with the acute care competencies and/or the primary care competencies. This applies only to the pediatric and adult-gerontology CNP population foci. Scope of practice of the primary care or acute care NP is not setting specific but is based on patient care needs.
++ The Clinical Nurse Specialist (CNS) is educated and assessed through national certification processes across the continuum from wellness to acute care.
* The population focus, adult-gerontology, encompasses the younger adult to the older adult, including the frail elderly.
** The population focus, psychiatric/mental health, encompasses education and practice across the lifespan.

Adapted from APRN Joint Dialogue Group (2008)

Figure 1. APRN regulatory [consensus] model

processes, and student outcomes. Certification in a specific role is awarded to individuals by the state after successful completion of the appropriate education and clinical training in a population focus and the passing of a national examination administered by a nursing organization. Only 5 of the 50 states do not require the national examination for NPs to become certified to practice in that state. Education or curriculum content and design are developed through national standards and guidelines from key nursing organizations and accrediting bodies. Curricula are fluid and are revised as standards change.

3. 2 New definition of APRN

The definition of an APRN now designates the following criteria: accredited graduate level education, national certification examination, advanced clinical knowledge and skills, builds on competencies of registered nurse; health promotion and/or maintenance with assessment, diagnosis, and management using pharmacologic and non-pharmacologic interventions; clinical experience, and licensure in 1 of the 4 APRN roles (APRN Joint Dialogue Group 2008). Nursing has the greatest control over A-C-E or all except licensure - L, which is controlled by the legislature in each state. Developing and maintaining collegial relationships with legislators is important in continuing legal reforms that are favorable to NP full practice authority. Legislators are interested in facts; therefore, NPs must demonstrate outcomes of their practice. More nurses are conducting research about NP and other APRN outcomes.

4. APRN practice

The only way to evaluate the effectiveness of any action or intervention is to measure outcomes. General dictionary definitions of outcome can be applied to nursing.

4. 1 Outcomes

Nursing outcomes are a desired condition, the end result of care, a measurable change in health status or behavior, or a measurable patient goal. The challenges in conducting outcomes research in nursing are several: ambiguity over role definition, historically the lack of unity in requirements for entry into programs, variations in the degrees received, debate over setting for and length of programs (for NPs − certificate, master's [MS], and now Doctor of Nursing Practice [DNP]), and differences in scope of practice (State versus Federal in the US). The challenges do not lend consistency to factors that are studied when conducting research about nurses and outcomes of practice (Newhouse et al 2011).

4. 2 Research evidence

Traditionally, the gold standard for research involving APRN or NP outcomes was comparative, measuring NP outcomes against physician care. Were NP outcomes equivalent or superior to physician outcomes? These were not the most reliable methods because physician practice was different from NP practice in terms of roles, authority, access, reimbursement, and other factors that were valued in the health care system. However, a seminal study by Mundinger et al (2000) demonstrated that "in an ambulatory care situation in which patients are randomly assigned to either nurse practitioners or physicians, and where nurse practitioners had the same authority, responsibilities, productivity and administrative requirements, and patient population as primary care physicians, patients' outcomes were comparable" (p 59). The findings from this study place NP practice on the radar of physicians and the public, with positive and negative implications. The public was educated more on the role of NPs in primary care, whereas some physicians felt more threatened.

A 2011 systematic review by Newhouse et al (2011) investigated how the care provided by APRNs (NP, CNM, certified registered nurse anesthetist [CRNA], and CNS) compared to that provided by physicians or teams without APRNs. Only US studies were analyzed, which included randomized control studies or observational

studies with at least two groups of providers and containing some quantitative data. A total of 69 studies were analyzed, 37 of which included data about NP practice. Of 12 specific outcomes measured, for 11 NP-directed care achieved outcomes equivalent to physician care. Outcomes for serum lipids, however, were more favorable for NPs than physicians. Nine of the outcomes were from studies considered of high quality indicating that further research is very unlikely to change our confidence in the estimate of effect. Conclusions were consistent with previously published studies: APRNs provide effective and high-quality patient care; they have an important role in improving the quality of patient care in the US; they could help address concerns about whether care provided by APRNs can safely augment the physician supply to support reform efforts aimed at expanding access to care (Newhouse et al, 2011).

Newhouse et al (2011) noted several limitations to conducting outcomes research in nursing. These include, but are not limited to; heterogeneity of study designs and methods, multiple time points for measuring outcomes, limited number of randomized designs, inadequate statistical data for calculating effect sizes, failure to describe the nature of the APRN and physician roles, complexity of relationships − APRN as part of a team. Other researchers (Sciamanna et al 2006, Stanik-Hutt et al 2013) have noted similar challenges: lack of methodological rigor, use of variable measurement strategies, lack of specific health related outcomes, use of physician as comparative group, lack of economic analysis, and outside influencing factors. All recommend further research on nursing outcomes to establish the difference APRN practice makes to improve health outcomes.

5. Redefining advanced nursing practice

New developments that influence advanced nursing practice are the landmark collaboration and publication of *The Future of Nursing*, the DNP clinical degree, new mandatory quality and safety initiatives for all health professionals, and the move toward interprofessional education.

5. 1 The future of nursing

The Institute of Medicine (IOM 2010) spearheaded a project to bring forth a nursing agenda that would take the profession into the next generation. A group of interdisciplinary professionals wrote a consensus document with four key messages for advancing nursing. The key messages were:

1. Nurses should practice to the full extent of their education and training.
2. Nurses should achieve higher levels of education and training through an improved education system that promotes seamless academic progression.
3. Nurses should be full partners, with physicians and other health care professionals, in redesigning health care in the United States.
4. Effective workforce planning and policy making require better data collection and an improved information infrastructure.

Pursuant to these key messages, eight recommendations were proposed. Although all are important, several has significant impact on NP practice: remove scope-of-practice barriers, double the number of nurses with a doctorate by 2020, prepare and enable nurses to lead change to advance health, and build an infrastructure for the collection and analysis of interprofessional health care workforce data.

5. 2 Education: The doctor of nursing practice

The American Association of Colleges of Nursing (AACN) defined advanced nursing practice as "any form of nursing intervention that influences health care outcomes for individuals or populations, including the direct care of individual patients, management of care for individuals and populations, administration of nursing and health care organizations, and the development and implementation of health policy" (AACN 2004, p 2). This definition encompasses the four recognized roles of the APRN − NP, CNM, CRNA,

and CNS. Another recommendation was that all APRNs be prepared at the doctoral level, through the DNP degree: "Practice-focused doctoral programs are designed to prepare experts in specialized advanced nursing practice. They focus heavily on practice that is innovative and evidence-based, reflecting the application of credible research findings" (AACN 2006, p3). To assist schools of nursing in preparing DNP graduates the Essentials were established, which indicate the core competencies expected of graduates and therefore, included in curricula (AACN 2006). These recommendations led to an explosion of new DNP programs, increasing from 20 in 2006 to 241 in 2013. The number of research doctorate programs (PhD), however, showed little growth from 103 in 2006 to 131 in 2013. The National Organization of Nurse Practitioner Faculties (NONPF) is considered the expert resource for NP education (NONPF 2012) ; the Board and membership also developed competencies for graduates from NP programs at the graduate level (master's or doctoral). The projected start date for DNP education to become mandatory is 2015; but this will most likely not happen (AACN 2004). One voice of opposition to this is that requiring doctoral education for NPs in particular will delay the entry into practice for a large number at a time of high demand for primary care providers. Another barrier is the capacity of schools of nursing to expand their programs to include the DNP due to faculty and other constraints. Many challenges remain in shifting APRN education from the master's to the doctoral level.

5. 3 Quality and safety education for nurses – QSEN

Along with the new vision for advancing nursing that includes more highly educated nurses, is the integration of quality and safety competencies for nurses at all levels. Graduates must attain competencies in domains for knowledge, skills, and attitudes in six content areas: quality improvement (QI), safety, teamwork and collaboration, patient-centered care, evidence-based practice (EBP), and informatics (QSEN 2012). Consistent with the recommendations in *The Future of Nursing* (IOM 2010), graduate nurses will be the future leaders in practice, administration, education, and research. An example of the competencies in the area of quality is described: a graduate would understand (knowledge) principles of change management; apply these principles by using data (skills) to improve patient and system outcomes; and demonstrate (attitude) leadership in affecting the necessary change. APRNs in DNP programs learn how to implement QI projects in a health system using EBP to effect change and improve health outcomes for patients.

5. 4 Interprofessional education collaborative – IPEC

Interprofessional education (IPE) has principles that are similar to the QSEN competencies but extend beyond a nursing focus: values/ethics for interprofessional practice, roles/responsibilities, interprofessional communication, and teams and teamwork (IPEC 2011). When students learn together in the classroom and in the clinical environment, the hope is that they will develop insight, skills, and attitudes that foster respect for the unique knowledge and skills each team member brings to a situation, understanding of how different professionals work together toward a common goal, an appreciation for the importance of communication at and across all levels, and the capacity for full collaborative practice. At the New York University College of Nursing, nursing students are placed in learning environments with dental, medical, and social work students to improve processes of delivering care and patient health outcomes. Nationally, IPE has become a standard within the health professions and a requirement for faculty who might seek grant funding. And at the center of IPE is the patient.

6. The future

Two considerations stand out when thinking

about the future – the need for more robust research about nursing outcomes and opportunities for nursing, and particularly for NPs and other APRNs, created by passage of the Affordable Care Act of 2010.

6. 1 Research agenda

The NP Research agenda includes actions in four major areas: Policy and Regulation, Workforce, Practice, and Education (ANA 2010). Examples for study in the area of policy and regulation are the impact of policy-guided practice models on patient outcomes and the effects of NP engagement in professional activism. Examples for study in the area of workforce capacity are creating a comprehensive description of the current NP workforce and defining the influence of policy and regulation on the NP workforce. Examples for study in the area of practice are consumer awareness about NPs and NP practice outcomes. Finally, examples for study in the area of education include the costs of NP preparation and what NP program variables foster NP graduates who are prepared to practice.

Research about NPs has become less restricted to only nurse researchers. More nurse researchers are partnering with researchers outside of nursing to conduct clinically relevant research. More practitioners, especially NPs with a clinical doctorate (DNP), are translating research findings by implementing quality improvement projects that demonstrate system change and practice change to improve patient outcomes.

6. 2 Health care system change

With the ACA comes expectations for a higher quality of care, improved individual and population health, increased access to care, interdisciplinary teamwork, development of innovative models of care, connected electronic health records, reimbursement based on performance; more efficient, effective delivery of health care at reduced cost; and a greater emphasis on patient-centered care and patient satisfaction (Patient Protection and ACA 2010). These mandates provide innumerable opportunities for NPs to participate fully in health care reform in the US. If NPs are to play a bigger part in primary care, reimbursement for services must be based on performance (outcomes) and equitable. Insurers are recognizing NPs within their panels of providers, therefore increasing access to care for members. NPs are more engaged in advocacy activities that promote awareness of NP practice and the role. Many regulations pursuant to the ACA have not been written yet; elements of the Act have been rolled out over time. This fact increases the importance of NPs educating legislators about the NP role to move the full research, practice, and education agendas along.

7. Conclusion

Back to the key messages from *The Future of Nursing* – NPs are educated and trained with the advanced knowledge and skills needed to provide primary care, to act as leaders on health teams, and to use evidence-based practice to effect change in systems to improve outcomes. Today, NPs in the US are almost 200,000 strong! The journey continues. The following statement is attributed to Loretta Ford (Figure 2): "The nurse practitioner movement is one of the finest demonstrations of how nurses exploited trends in the larger health care system to advance their own professional agenda and to realize their great potential to serve society."

Figure 2. Author with Loretta Ford in 2006

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