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The Role Of Nurse Practitioners In Reinventing Primary Care

DOI: 10.1377/hlthaff.2010.0440
HEALTH AFFAIRS 29,
NO. 5 (2010): 893–899

ABSTRACT **Nurse practitioners are the principal group of advanced-practice nurses delivering primary care in the United States. We reviewed the current and projected nurse practitioner workforce, and we summarize the available evidence of their contributions to improving primary care and reducing more costly health resource use. We recommend that nurse practice acts—the state laws governing how nurses may practice—be standardized, that equivalent reimbursement be paid for comparable services regardless of practitioner, and that performance results be publicly reported to maximize the high-quality care that nurse practitioners provide.**

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Nurses represent the single largest group of health care providers in the United States and are the initial point of patient contact in many settings. Over the past few decades, the number of licensed registered nurses (RNs) in the United States has grown steadily to 2.9 million.[1] Growth in the RN workforce has been accompanied by an increase in the number and capacity of highly trained advanced-practice registered nurses (APRNs). These are RNs who have at least a master's degree in nursing, are certified by professional or specialty nursing organizations, and are licensed to deliver care consistent with their areas of expertise and the laws that govern nursing scope of practice within each state.

Advanced-practice RNs represent about 8 percent of the nursing workforce and encompass four distinct roles: nurse anesthetists, nurse-midwives, clinical nurse specialists (nurses with advanced knowledge and skills in the care of special patient populations based primarily in acute care settings), and nurse practitioners (NPs). About 70–80 percent of advanced-practice RNs work in primary care—in pediatrics, adult health, gerontology, and nurse midwifery.[1,2] Here we examine the primary care role and contributions of the approximately 141,000 who are nurse practitioners.

Nurse practitioners deliver primary care in small and large private and public practices and in clinics, schools, and workplaces. They function in both independent and collaborative practice arrangements, often taking the lead clinical, management, and accountability roles in innovative primary care models such as nurse-managed health centers[3,4] and retail clinics.[5,6]

Challenges To Primary Care

The U.S. health care system is plagued by a confluence of problems that challenge the core of its primary care system.

The growth in chronically ill[7] and elderly[8] populations, for example, compounds concerns about the adequacy of the workforce and persistent lags in quality. Questions regarding the value of the primary care system, as evidenced by performance on numerous economic indicators, health outcomes, and multiple dimensions of patients' experiences, have been raised, especially in comparison to other developed countries.[9,10]

WORKFORCE Gaps in quality are accompanied by workforce shortages that threaten the

provision of services.[11] The number of medical students and residents entering primary care or pursuing careers in general internal medicine or family practice is steadily decreasing.[12–14] However, the nation is benefiting from the relative growth among NPs, whose per capita supply is projected to increase annually by an average of 9 percent.[15]

There are similar trends in the education and training "pipeline." Between 1995 and 2006, primary care medicine residency programs declined 3 percent, while primary care training programs for nurse practitioners grew 61 percent.[11] However, faculty shortages, inadequate supply of clinical preceptors and placements, and limited funding for students challenge this continued growth. More than 2,700 qualified applicants to master's degree programs preparing NPs were turned away in 2008.[16]

SEEKING SOLUTIONS To better understand and quantify nurse practitioners' roles in primary health care, we examined the literature on their participation in the health care workforce. We looked for current evidence of NPs' contributions to high-value primary health care (that is, care that is safe, effective, patient-centered, timely, equitable, and efficient). We also sought to identify barriers to maximizing NPs' contributions and policy solutions to enable their rapid and efficient use in primary care.

Literature Review

We conducted a structured literature search to identify and synthesize available evidence on the value of advance practice nurses in delivering primary care, with a particular emphasis on the contributions of nurse practitioners. The online database PubMed/MEDLINE was searched to identify empirical literature relevant to this topic published in English since 2000, updating systematic reviews that examined evidence through 2002.[17–19]

The search strategy was based on a combination of terms including advanced-practice nursing, nurse practitioner, nurse midwife, nurse clinician, primary health care, quality of health care, outcomes assessment, primary health care standards, and ambulatory care standards. This search yielded 131 papers. These were examined, first, at the title and abstract levels and, if retained, at the text level based on the following inclusion criteria: (1) they pertained to experimental or observational studies; (2) they compared primary care delivered by advanced-practice nurses to that of other primary care practitioners; (3) the underlying studies were not conducted exclusively in acute care, inpatient, or institutional settings; and (4) they did not pertain to pilot studies or publications of intermediate results.

We further refined our review to focus exclusively on studies that involved nurse practitioners, although the search strategy identified studies of primary care delivered by all advanced-practice nurses. To confirm that all relevant literature had been identified, we consulted nursing researchers, leaders of selected professional nursing organizations, and key health care contacts. The absence of studies examining the effectiveness of nurse-led retail clinics and nurse-managed health centers prompted us to seek out and identify additional scholarly articles on these topics. This yielded six additional studies, four of which addressed retail clinics[20–22] or nurse-managed health centers[4] and two of which had not been identified initially because keywords did not match our search terms.[17,23] Ultimately, twenty-six titles were reviewed, and their features were compared using standard descriptors (for example, sample, design, findings).

Among those retained, three studies were randomized controlled trials [24–26] with findings from one randomized control trial[25] reported in two additional titles.[27,28] Two studies were systematic reviews[17,18] with findings from one[17] reported in an additional title.[29] Eighteen titles reported findings from descriptive studies. A complete bibliographic listing of these articles is provided in an online Appendix.[30]

Study Findings

NURSE PRACTITIONERS' CONTRIBUTIONS TO HIGH-VALUE PRIMARY CARE Our work adds to the body of literature that examines the equivalence of nurse practitioners and physicians in the provision of primary care. The first randomized trial comparing the two types of practitioners' outcomes in Canada was published in 1974.[31,32] Results from that study demonstrated that patient outcomes, including mortality; satisfaction; and physical, emotional, and social functioning, among those seeing nurse practitioners were equivalent to those seeing physicians.

Subsequently, the congressional Office of Technology Assessment (OTA) conducted two independent reviews of nonphysician providers in the United States.[33,34] The OTA concluded that "within their areas of competence, nurse practitioners, physician's assistants, and certified nurse-midwives provide care whose quality is equivalent to that of care provided by physicians" (p. 5).[34]

Two recent systematic reviews substantiate this conclusion.[17,18] In both reviews, patients

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seeing NPs were more satisfied, had longer consultations, and had more tests, with no appreciable differences in patient outcomes, processes of care, or resource use.

These results are confirmed by findings from three randomized clinical trials as well as two secondary publications of these trials. They are further reinforced by fourteen additional, descriptive studies comparing NP- and physician-delivered primary care. Nurse practitioners provided care that was equivalent to the care provided by physicians—and, in some studies, more effective care among selected measures than that provided by physicians.[24–27,35–40]

Consistent findings included the absence of group differences in health status, treatment practices, and prescribing behavior. Also consistent were better results among NPs on measures of patient follow-up; consultation time; satisfaction; and the provision of screening, assessment, and counseling.

ECONOMIC IMPACT Overall, we found very few U.S. studies that estimated the cost-effectiveness of NP-delivered primary care. Findings from the studies based on insurance claims that compared nurse practitioner and physician costs[23] and the efficiency of retail clinics[21,22] demonstrated lower costs associated with NPs' care.

However, our broader literature search identified a policy analysis that provides relevant cost data and that was conducted by the RAND Corporation on behalf of the Commonwealth of Massachusetts. The analysis followed the state's adoption of universal coverage legislation[41] The analysis assumes that the average cost of a nurse practitioner or physician assistant visit is 20–35 percent lower than the average cost of a physician visit. By substituting such visits for physician visits, the analysis projects cumulative statewide savings of $4.2–$8.4 billion (0.6–1.3 percent) for the period 2010–2020.

Notably, substitution of visits to physicians by visits to nurse practitioners and physician assistants was one of a few scenarios that achieved savings in the first year of implementation. Such substitution also achieved savings under so-called lower- and upper-bound scenarios; in other words, whether as few as 9.2 percent of all office visits turned into visits to nurse practitioners or physician assistants, or as many as 18.1 percent of all office visits did, savings were achieved.[41] Based on these estimates, the use of nurse practitioners and physician assistants in the delivery of primary care could result in substantial health care savings if implemented in other states.

A second policy option supported by the RAND analysis was the increased use of retail clinics, which are typically staffed by NPs. Assuming growth in the number of retail clinics and patients' use of them, as well as substitution of a percentage of clinic visits for those at more costly sites, RAND predicted a maximum savings of $6 billion (0.9 percent) over a ten-year period that would be captured mainly by private insurers. However, no effect was realized under a lower-bound scenario (that is, no growth in the retail clinic business and negligible spending changes). The authors concluded that "the trend in retail and on-site clinics is worth watching, ... but the effect on spending at this point is unknown."[41]

LIMITATIONS A number of limitations should be considered in drawing conclusions from these data. First, the search terminology and exclusion criteria may have unintentionally influenced the body of evidence we examined. Although outreach to experts in nursing and health care was intended to diminish this occurrence, it is possible that relevant studies were overlooked.

Second, the quality of the studies retained in this review is uneven. This concern is mitigated by the fact that findings from the most rigorous studies reinforce those of questionable quality. More important, findings from our review also verify conclusions drawn from systematic reviews of high-quality evidence.

Third, four studies included in this review were conducted outside the United States.[24,26,36,39] Because none of these studies informed our economic analysis, which would have been highly sensitive to differences in health care delivery and payment policies enacted by other countries, we considered them applicable to this synthesis.

Finally, findings regarding the economic impact of NPs are limited by the small number of U.S. studies comparing costs, methodological concerns, and questions regarding the assumptions on which these analyses are based. In RAND's analysis, for example, health care costs

were estimated without fully accounting for variations across states or costs to all parties. Savings associated with retail clinic expansion may be more a function of the overall business model—for example, payment per case versus fee-for-service—than with the presence of nurse practitioners.

Barriers To The Potential Of The NP Workforce

Despite acknowledged limitations, a growing body of rigorous evidence demonstrates NPs' important contributions to high-value primary care. However, substantial barriers prevent nurse practitioners from practicing to their fullest capabilities.

STATE LAWS The most significant of these is states' scope-of-practice laws that define nurses' roles, articulate oversight requirements, and govern practice and prescriptive authorities. In many cases,[42] nurse practice acts are unnecessarily restrictive and keep NPs from providing the comprehensive primary care services permitted by their licenses and educational preparation.

The tremendous state-to-state variation in scope-of-practice laws contributes to NPs' migration from highly restrictive to less restrictive states and to reductions in patient access in some areas.[43,44] The reasons for state-based scope-of-practice laws are well documented[45] and are relevant to the formulation of potential policy solutions.

PAYMENT POLICIES Disparate payment policies that reimburse nurse practitioners only a portion of what is paid to physicians for the same services raise additional concerns. Medicare, Medicaid, and private insurers typically reimburse NPs at rates that are just 75–85 percent of what they pay physicians for the same services.[46–48] There are some exceptions: Under Medicare, for example, nurse practitioners can bill 100 percent of the physician rate if they bill under a physician's provider number and are directly supervised by a physician (that is, "incident billing"). Yet nurse practitioners can bill Medicare just 85 percent of the physician fee under their own provider number. Although the rate varies by payer, comparable patterns exist—reimbursement at a portion of physician rates for comparable services.[49]

In a 2002 report to Congress, the Medicare Payment Advisory Commission (MedPAC) examined these practices, found "no specific analytic foundation" for the disparity in payment rates[46] and called for further study of the issue. In light of rising health care costs,[50,51] interest among policy makers in lowering overall health care spending,[52] and available evidence regarding the quality of care and outcomes demonstrated by nurse practitioners, current reimbursement policies should be reexamined. In particular, the way primary care services are valued and the amount payers should be willing to spend on them deserve thorough attention.

Substantial efforts should be made to standardize nurse practice acts and remove unwarranted restrictions.

PROFESSIONAL TENSIONS Although state and federal policies pose sizable external obstacles, professional jockeying by nurse practitioners, physicians, and physician assistants to control professional practice and compensation has resulted in organized opposition to NPs' quest for independence. Fearing increased competition, professional medical groups, health care systems, and managed care organizations have typically resisted expanding the practice scope of nurse practitioners.[53] Without an opposing outcry from consumers, patients, family members, and other stakeholders, insufficient stimulus exists among policy makers to respond to organized medicine.

Policy Solutions

To promote more effective use of the NP workforce, state and federal policies that regulate all health care practitioners' practice should reflect each profession's knowledge, skills, and experience, instead of being constrained by parochial command-and-control relationships. Through ensuring consistency of professional standards and strengthening providers' accountability, these regulations should also facilitate interprofessional collaboration, foster innovative practice, and enhance the accessibility of high-quality primary care.

REMOVE UNWARRANTED RESTRICTIONS In light of the evidence demonstrating the equivalence and, in some cases, advantages of NP-provided primary care, substantial efforts should be made to standardize nurse practice acts and remove unwarranted restrictions. To this end, the Con-

Nurse practitioners should be held accountable for their contributions to high-value primary care.

sensus Model for Advanced Practice Registered Nurse Regulation[44] is based on a single advanced-practice RN license, enabling independent practice with no regulatory requirements for collaboration, direction, or supervision. This model should be both supported and implemented.

EQUALIZE PAYMENTS The arbitrary discrepancies in Medicare nurse practitioner reimbursement deemed baseless by MedPAC should be fully evaluated, with an overall aim of achieving pay parity for the same services. Equivalence in reimbursement for comparable services and complete accessibility to tests of novel payment approaches, regardless of practitioner type, should be achieved. Demonstrations conducted by the Centers for Medicare and Medicaid Services of market-based, population-based, and performance-based incentives—including medical home models, accountable care organizations, and bundled payments—should be structured to recognize NPs as eligible providers.

INCREASE NURSES' ACCOUNTABILITY Nurse practitioners should be held accountable for their contributions to high-value primary care. A growing number of reports published by federal and state governments, payers, employers, health plans, states, and other stakeholders disclose health care provider performance information to consumers.

The Agency for Healthcare Research and Quality's (AHRQ's) Health Care Quality Report Card Compendium, for example, has inventoried more than 200 sources of comparative information on health care providers, including health plans, hospitals, medical groups, and individual physicians.[54] These quality reports do not contain information on the performance of NPs who practice independently or who are in collaborative practice. As is the case with other providers whose performance is measured and disclosed, comparative results of NPs' performance should be made publicly available, to stimulate quality improvement and facilitate consumers' selection of high-quality providers.

EXPAND NURSE-MANAGED CENTERS Welcome support has come from Congress's recent moves to expand the number of nurse-managed health centers through health reform legislation. The Patient Protection and Affordable Care Act, signed into law 23 March 2010, provides $50 million in fiscal year 2010 to expand operating nurse-managed health centers with contingencies to extend funding through 2014. Realizing this support will enable nurse-managed health centers to expand primary care services to vulnerable populations and in underserved areas.

ADDRESS PROFESSIONAL TENSIONS Although these options will maximize the use of nurse practitioners, they will do little either to mitigate the professional discourtesies that plague nurse-physician relationships or to enhance coordination between professionals within and across sites of care.[53] As the Institute of Medicine has recommended,[55] longer-term, sustainable change in these areas requires the development and reinforcement of interprofessional teams. Fostering teamwork will require a number of steps. These will include systematic identification and, in some areas, creation of effective interprofessional primary care team models; educational programs that impart the necessary skills to initiate and sustain teamwork; newly constructed performance measures that address team functions and outcomes; and financial incentives that reward effective teams.

FUND PIPELINE EXPANSIONS Given the need to increase the primary care workforce overall, additional funds are needed to expand the pipeline of primary care practitioners, including advanced-practice nurses. To address the bottleneck limiting qualified students from NP programs, we need incentives to stimulate the supply of nurse faculty. The Patient Protection and Affordable Care Act has provided some relief. It expands eligibility criteria so that faculty at nursing schools qualify for loan repayment and scholarship programs, and it establishes a federally funded student loan repayment program for nurses with outstanding debt who pursue careers in nursing education. However, vigilance is needed to ensure that workforce resources align with longer-term national demands. For this reason, funding provided by Medicare's graduate medical education program should be redirected to support the education of nurse practitioners for roles in primary care.

PURSUE FURTHER STUDY Important issues including workforce trends and adequacy, the efficiency and effectiveness of nurse-managed health centers and retail clinics, and the effects

of nurse practitioners in leading patient-centered medical homes should be closely studied. In the absence of definitive economic analyses, a priority should be placed on distinguishing and disentangling the contributions of nurse practitioners to high-value primary care. There should also be rigorous studies of the impact on overall cost savings of equivalent reimbursement rates for primary care services, regardless of practitioner type.

Conclusion

The U.S. health care system is challenged by shifting demographic, economic, and political pressures. The growth of the chronically ill and elderly populations, gaps in health care quality, and increases in health care spending will intensify the demand for high-quality primary care services at the same time that supply of primary care physicians is expected to shrink.

The NP workforce presents a potential answer to these pressures, but it has been largely overlooked by policy makers, the public, and other health care stakeholders. Fully integrating the contributions and skills of all primary care practitioners and, specifically, the contributions of nurse practitioners is a vital policy step toward achieving high-value health care. ■

The authors are grateful for the support of the NewCourtland Center for Transitions and Health, University of Pennsylvania School of Nursing.

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