

**Progress in Achieving the Recommendations of the 2010 Institute of Medicine Report on
*The Future of Nursing: Leading Change and Advancing Health***

Scope of Practice: An Updated Review of the Evidence

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“Nurses should practice to the full extent of their education and training.” (Theme 1)

Evidence Brief: Nurse Scope of Practice

Summary: The IOM *Future of Nursing* Report recommended, on the basis of research evidence through 2009, that the U.S. should remove scope-of-practice barriers. Additional evidence has been published in 2016 and 2017 supporting the association between nurses having full practice authority and the supply of providers, access to care, quality of care, and costs. This research has focused primarily on nurse practitioners (NPs). Findings reinforce and strengthen prior research indicating that NPs provide primary care of similar quality as physicians, and that full practice authority for NPs is associated with greater access to care, fewer avoidable hospitalizations, fewer hospital readmissions, fewer emergency department visits specific conditions, and cost savings.

Methods

A new search on PubMed and a file of previously-collected articles were reviewed for articles published in 2016 or 2017 that examined the impact of advanced practice registered nurse (APRN) care on quality and costs. The literature was also reviewed to identify articles that examined the effect of scope of practice regulations on supply of nurse practitioners, their roles and satisfaction within health care organizations, access to care, quality of care, and costs. A total of 177 articles were retrieved, 43 of which were relevant to the aims of this review.

What is the strength of the new evidence published in 2016 and 2017 that full practice authority in nursing is associated with access to care, quality of care, and costs?

Over the past year, some new original research and several systematic reviews have been published on access, supply and quality of care provided by advanced practice registered nurses (APRNs), with particular attention to the effects of NP, and the effects of these clinicians on costs of care. The evidence is stronger regarding the relationship between NP scope of practice and access to care than for costs, although the evidence regarding costs has strengthened over the past year.

What are the key findings of new research in 2016 and 2017 on the association between full practice authority and access to care, quality of care, and costs?

- Access to care:
 - A literature review concluded that states granting NPs greater SOP authority exhibited an increase in the number and growth of NPs, greater care provision by NPs, and expanded health care utilization, especially among rural and vulnerable populations (Xue, Ye, Brewer, & Spetz, 2016).
 - An analysis of data from ambulatory medical practices found that NPs were more likely to work in primary care in states with full scope of practice, and also were more likely to provide primary care if the state also reimbursed NPs at 100% of the physician Medicaid fee-for-service rate (Barnes et al., 2016). A study of county-level data also concluded that removing scope of practice restrictions could modestly expand the capacity of the primary care workforce in the short-run (Graves et al., 2016).
 - A national study focused on nursing homes from 2000-2010 found an increase in the employment of NPs in nursing homes, but that scope of practice regulations had a “mixed” impact on NP employment growth (Intrator et al., 2015).
 - An analysis of NP scope of practice changes in three states found that relaxation of regulations was associated with retail clinic growth (Brooks Carthon, Sammarco, Pancir, Chittams, & Nicely, 2016).
- Primary care outcomes:
 - An evaluation of a program that provided NP comanagement for a home-based primary care program reported that there was a high level of provider satisfaction and reductions in annual hospitalization and readmission rates among high-risk home-bound patients (Jones et al., 2016).
 - An evaluation of NP visits for African-American teens with asthma found a positive relationship between the number of NP visits and the students’ appropriate use of urgent care versus emergency room visits (Luckose, Harrison, & Velsor-Friedrich, 2016). Similarly, an early-stage evaluation of an NP-delivered intervention to reduce obesity in a primary care setting reported improvement in health responsibility, physical activity, nutrition, spiritual growth, stress

management, and motivation for healthy living, and a decline in diastolic blood pressure declined (Ritten, Waldrop, & Kitson, 2016).

- Some studies reported negative or neutral effects of NP care. A study of national rates of prescribing of opioid and benzodiazepine medications reported that there was no difference in statewide prescribing rates between states with restricted practice versus full practice authority for NPs (Schirle & McCabe, 2016). A study in Pennsylvania focused on prescribing of new chronic disease medications, reporting that NPs/PAs were slower to adopt new pharmaceuticals. This finding may suggest that NPs/PAs are more focused on evidence-based practice, receive less intense marketing from drug companies, or are more attentive to costs; the authors concluded that more research is needed to understand the differences (Marcum, Bellon, Li, Gellad, & Donohue, 2016). One study that used national survey data found that, compared to people with physician only care, patients with NPs/PAs as usual providers and supplemental providers had more primary care visits. Patients reporting NPs/PAs as supplemental providers had a greater risk of emergency department utilization and lower satisfaction; this relationship was not observed when NPs/PAs were usual providers. No differences were seen for hospitalizations or unmet need (Everett, Morgan, & Jackson, 2016). Another study reported that NPs had higher rates of antibiotic prescribing compared to physicians for pediatric patients for upper respiratory tract infections, although it is not clear if this is an indicator of good or bad care (FERENCE et al., 2016).
- Outcomes for specific conditions and settings:
 - Two studies reported that NP-led interventions for patients with diabetes in pre-operative and inpatient cardiology services were associated with better glycemic control and quality of life (Garg et al., 2016; Li et al., 2017).
 - Multiple studies found positive effects of NPs on quality of care for cardiology services, including for a chest pain evaluation unit and for cardioversion (Ingram, McKee, Quirke, Kelly, & Moloney, 2016; Norton et al., 2016; Zhu, Islam, & Bergmann, 2016). An NP-led program for home-based patients with congestive heart failure reported a reduction in 30-day readmissions (Moore, 2016).

- Two studies found that NP coverage in neurocritical care reduced door-to-needle time for stroke patients (Moran, Nakagawa, Asai, & Koenig, 2016). A study of an NP-led transitional stroke program documented that it reduced readmissions (Condon, Lycan, Duncan, & Bushnell, 2016).
- A study of patient who had been admitted to the hospital for chronic obstructive pulmonary disorder (COPD) reported that, compared to patients cared for by physicians, patients cared for by NPs/PAs more often received appropriate short-term treatment and referral to a pulmonologist. They also were less like to visit an emergency department for COPD compared to patients cared for by physicians (Agarwal, Zhang, Kuo, & Sharma, 2016).
- A study of NPs in critical care units found they achieve similar outcomes as resident teams (Landsperger, Semler, Wang, Byrne, & Wheeler, 2016).
- The addition of NPs and PAs to a liver transplantation program led to improved outcomes, including graft survival (Chaney, Harnois, Musto, & Nguyen, 2016).
- The addition of an NP to an orthopedic trauma center was associated with a significant decrease in length of stay and costs (Hiza, Gottschalk, Umpierrez, Bush, & Reisman, 2015).
- Two studies of NPs in pediatric inpatient settings reported fewer unplanned intensive care unit transfers and lower length of stay (Rejtar, Ranstrom, & Allcox, 2017; Rowan et al., 2016).
- Three studies of NPs in long-term care settings found evidence of their benefit in these settings. One study compared the costs and effectiveness of establishing NP-MD teams for nursing home care. They reported reductions in emergency department transfers, but the data were not sufficient to demonstrate cost-effectiveness (Lacny et al., 2016). Another study evaluated the establishment of an NP-led pain management team in a nursing home, and reported significant improvements in resident pain and functional status (Kaasalainen et al., 2016). A third paper examined the impact of closing an NP-led program of all-inclusive care for the elderly (PACE), reporting increases in emergency department visits, hospitalizations, and nursing home placements post-PACE (Meunier et al., 2016).

- One study has been published in nurse-midwife scope of practice, reporting that restrictive scope of practice laws were neither helpful nor harmful in regards to maternal behaviors and infant health outcomes, but states that allowed nurse-midwives to practice with no barriers had lower rates of induced labor and Cesarean section births (Markowitz, Adams, Lewitt, & Dunlop, 2016).
- A study of scope of practice regulations for nurse-anesthetists found no evidence that the odds of a complication differ by scope of practice (Negrusa, Hogan, Warner, Schroeder, & Pang, 2016).
- Costs and economic impact:
 - An analysis of Medicare data reported that evaluation and management payments for beneficiaries assigned to an NP were 29% less than payment for beneficiaries assigned to primary care physicians. There also were lower payments for inpatient and office visit payments (Perloff, DesRoches, & Buerhaus, 2016).
 - An analysis of insurance claims data found that restrictive NP scope of practice restrictions increased the price of a well-child visit by 3-16%, with no difference in quality outcomes (Kleiner, Marier, Park, & Wing, 2016).
 - Analysis of Medicaid insurance claims revealed that allowing PAs to prescribe controlled substances had a significant association with a reduction in the cost of claims of 11% per Medicaid recipient. Allowing NPs full prescribing authority was also associated with lower costs but the relationship was not statistically significant (Timmons, 2016).
 - Removal of scope of practice restrictions between 1999 and 2012 decreased the number of malpractice payments made by physicians by as much as 31% (McMichael, Buerhaus, & Safriet, 2017).
 - A study of the addition of NPs and physician assistants (PAs) to primary care teams were associated with significantly fewer specialist referrals. It also was associated with fewer hospitalizations, emergency department visits, and advanced diagnostic imaging services, but these effects were not statistically significant (Liu et al., 2017). An unrelated study used national data from ambulatory medical practices and found that NPs/PAs and physicians provided an equivalent amount of low-value health services for three common conditions,

thus negating the hypothesis that NPs/PAs lower-value care (Mafi, Wee, Davis, & Landon, 2016).

- A simulation model was used to estimate the economic impact of adding an NP or PA to a rural community. The analysis found that a rural NP/PA can generate 4.4 local jobs if the community does not have a hospital, and 18.5 jobs if it does (Eilrich, 2016).
- Clinical roles, autonomy, and satisfaction:
 - Nurse practitioners who worked in primary care reported the highest levels of autonomy compared with other settings (Athey et al., 2016). NPs in rural settings - particularly remote areas – also reported greater autonomy and job satisfaction (Spetz, Skillman, & Andrilla, 2016).
 - Surveys of NPs and physicians revealed that physicians generally believed that NPs needed some association with physicians for patient safety, and NPs preferred having a physician readily accessible as needed (Kraus & DuBois, 2016).
 - An exploratory survey found that NPs perceived that requirements for physician oversight impacted their practice and may jeopardize patient safety (Lowery, Scott, & Swanson, 2016). An unrelated survey reported that NP autonomy and favorable relationships with leadership improve teamwork (Poghosyan & Liu, 2016).

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