



Nurse Practitioner Cost-Effectiveness

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Cost-Effectiveness

Nurse Practitioners (NPs) are a proven response to the evolving trend towards wellness and preventive health care driven by consumer demand. For 45 years, the body of evidence has supported NPs as cost-effective providers of high-quality care.

Nearly three decades ago, the Office of Technology Assessment (OTA) (1981) conducted an extensive case analysis of NP practice and reported that NPs provided equivalent or improved medical care at a lower total cost than physicians. The authors determined that NPs could manage up to 80% of adult primary care and 90% of pediatric primary care needs at that time. NPs in a physician practice were found to have the potential to decrease the cost per patient visit by as much as one third, particularly when seeing patients in an independent, rather than complementary, manner. Since 1981, continued reports have supported ongoing cost-effectiveness of NP practice. When OTA later re-examined the role of NP practice, the positive analysis was confirmed (OTA, 1986).

In 1981, the hourly cost of an NP was one-third to one-half the cost of a physician (OTA). In 2009, the median total compensation for primary care physicians ranged from \$198,000 (family) to \$205,000 (internal medicine) (American Medical Group Association, 2009). The mean 2009 total salary for NPs across all specialties who practiced full-time was \$90,200 (American Academy of Nurse Practitioners [AANP], 2009). NP preparation currently costs 20-25% that of physician preparation (American Association of Colleges of Nursing, 2000). A recent study of 26 capitated primary care practices with approximately two million visits by 206 providers determined that the practitioner labor costs per visit and total labor costs per visit were lower in practices where NPs and physician assistants (PAs) were used to a greater extent (Roblin, Howard, Becker, Adams, and Roberts, 2004). When productivity measures, salaries, and costs of education are considered, NPs are cost effective providers of health services.

NPs practicing in Tennessee's state-managed MCO, TennCare, delivered health care at 23% below the average cost of other primary care providers with a 21% reduction in hospital inpatient rates and 24% lower lab utilization rates compared to physicians (Spitzer, 1997). Jenkins and Torrisi (1995) performed a one-year study comparing a family practice physician-managed practice with an NP-managed practice within the same managed care organization. The NP-managed practice had 43% of the total emergency department visits, 38% of the inpatient days, and a total annualized per member monthly cost that was 50% that of the physician practice.

A study conducted in a large HMO setting found that adding an NP to the practice could virtually double the typical panel of patients seen by a physician. The projected increase in revenue was \$1.28 per member per month, or approximately \$1.65 million per 100,000 enrollees per year (Burl, Bonner, and Rao, 1994).

Chenowith, Martin, Pankowski, and Raymond (2005) analyzed the health care costs associated with an innovative on-site NP practice for over 4000 employees and their dependents. Compared with claims from earlier years, the NP care resulted in significant savings of \$.8 to 1.5 million, with a benefit-to-cost ratio of up to 15 to 1. In a later analysis, Chenowith, Martin, Panowski, and Raymond (2008) tested two additional benefit-to-cost models, using 2004-2006 data for patients receiving occupational health care from an NP. The later models further supported cost savings for NP care, demonstrating a benefit to cost ratio ranging from 2.0-8.7 to 1, depending on the method. Time lost from work was lower for workers managed by NPs, compared to physicians, as another aspect of cost-savings (Sears, Wickizer, Franklin, Cheadie, and Berkowitz, 2007).

A cost analysis comparing the cost of providing services at an NP managed center for homeless clients with other community alternatives showed earlier and less costly interventions by the NP managed center (Hunter, Ventura, and Keams, 1999). Coddington and Sands (2009) reviewed the literature regarding cost and quality of care for nurse managed centers where APNs, namely NPs, were responsible for patient care. Well-established NMCs with higher patient volumes operated at per patient cost lower than other options, with significant savings. The patients had fewer emergency visits and hospitalizations in several of the reports reviewed, further contributing to cost-effectiveness.

Chen, McNeese-Smith, Cowan, Upenieks, and Afifi (2009) found that NP-led care was associated with lower overall drug costs for inpatients. When Paez and Allen (2006) compared NP and physician management of hypercholesterolemia following revascularization, they found patients in the NP-managed group had lower drug costs, while being more likely to achieve their goals and comply with prescribed regimen.

A number of studies have documented the cost-effectiveness of NPs in managing the health of older adults. When comparing the cost of physician-only teams with the cost of a physician-NP team in one long term care facility, the physician-NP team's cost were 42% lower for the intermediate and skilled care residents and 26% lower for those with long-term stays. The physician-NP teams also had significantly lower rates of emergency department transfers, shorter hospital lengths of stay, and fewer specialty visits (Hummel and Pirzada, 1994). Intrator (2004) found that residents in nursing homes with NPs were less likely to develop ambulatory care-sensitive diagnoses that would then result in hospitalizations. In fact, the odds ratio for preventable ambulatory care-sensitive hospitalizations of long-stay residents was lower (0.83) for facilities with NPs than for facilities with more physicians on staff (odds ratio 1.14). Bakerjian (2008) reviewed articles regarding NP care of nursing home residents. She summarizes a review of 17 studies comparing nursing home residents who are patients of NPs with others, demonstrating lower rates of hospitalization for the NP patients. Seven studies of cost outcomes of NP care consistently demonstrated lower cost of care than control or comparison groups. The potential for NPs to control costs associated with the healthcare of older adults has been recognized by United Health (2009), which recommended that by providing NPs to manage nursing home patients, \$166 billion in healthcare savings could be realized.

A collaborative NP/physician team was associated with decreased length of stay and costs and higher hospital profit, with similar readmission and mortality rates (Cowan et al., 2006; Ettner et al., 2006). Larkin (2003) cites a number of studies supporting decreased costs, complication rates, and lengths of stay associated with NP-managed care. For instance, he cites University of Virginia Health System's 1999 introduction of an NP model in the area of neuroscience, resulting in over \$2.4 million savings the first year and a return on investment of 1600 percent. The NP model has been expanded in this system, with similar savings and improved outcomes documented. A one-year retrospective study of 1077 HMO enrollees residing in 45 long term care settings demonstrated a \$72 monthly gain per resident, compared with a monthly \$197 loss for residents seen by physicians alone (Burl, Bonner, Rao, and Kan, 1998). Boling (2009) cites outcomes documented by Smigelski et al. for an intensive short-term transitional care NP program, through which healthcare costs were decreased by 65% or more after enrollment. Another example cited includes an NP model introduced at Loyola University Health System's cardiovascular area, with a decrease in mortality from 3.7% to 0.6% and over 9% decreased cost per case (from \$27,037 to \$24,511).

In addition to absolute cost, other factors are important to health care cost-effectiveness. These include illness prevention, health promotion, and outcomes. See Documentation of Quality of Nurse Practitioner Practice (AANP, 2010) for further discussion.

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