Nurse Practitioner Cost-Effectiveness

Nurse Practitioners (NPs) are a proven response to the evolving trend towards wellness and preventive health care driven by consumer demand. A solid body of evidence demonstrates that NPs have consistently proven to be cost-effective providers of high-quality care for almost 50 years. Examples of the NP cost-effectiveness research are described below.

Over three decades ago, the Office of Technology Assessment (OTA) (1981) conducted an extensive case analysis of NP practice, reporting that NPs provided equivalent or improved medical care at a lower total cost than physicians. NPs in a physician practice potentially decreased the cost of patient visits by as much as one third, particularly when seeing patients in an independent, rather than complementary, manner. A subsequent OTA analysis (1986) confirmed original findings regarding NP cost effectiveness. All later studies of NP care have found similar cost-efficiencies associated with NP practice.

The cost-effectiveness of NPs begins with their academic preparation. The American Association of Colleges of Nursing has long reported that NP preparation cost 20-25% that of physicians. In 2009, the total tuition cost for NP preparation was less than one-year tuition for medical (MD or DO) preparation (AANP, 2010).

Comparable savings are associated with NP compensation. In 1981, the hourly cost of an NP was one-third to one-half that of a physician (OTA). The difference in compensation has remained unchanged for 30 years. In 2010, when the median total compensation for primary care physicians ranged from $208,658 (family) to $219,500 (internal medicine) (American Medical Group Association, 2010), the mean full-time NP's total salary was $97,345, across all types of practice (American Academy of Nurse Practitioners [AANP], 2010). A study of 26 capitated primary care practices with approximately two million visits by 206 providers determined that the practitioner labor costs and total labor costs per visit were both 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.

Based on a systematic review of 37 studies, Newhouse et al (2011) found consistent evidence that cost-related outcomes such as length of stay, emergency visits, and hospitalizations for NP care are equivalent to those of physicians. In 2012, modeling techniques were used to predict the potential for increased NP cost-effectiveness into the future, based on prior research and data. Using Texas as the model State, Perryman (2012) analyzed the potential economic impact that would be associated with greater use of NPs and other advanced practice nurses, projecting over $16 billion in immediate savings which would increase over time.

NP cost-effectiveness is not dependent on actual practice setting and is demonstrated in primary care, acute care, and long term care settings. For instance, NPs practicing in Tennessee's state-managed managed care organization (MCO) delivered health care at 23% below the average cost associated with other primary care providers, achieving a 21% reduction in hospital inpatient rates and 24% lower lab utilization rates compared to physicians (Spitzer, 1997). A one-year study comparing a family practice physician-managed practice with an

NP-managed practice within an MCO found that compared to the physician practice, the NP-managed practice had 43% of the total emergency department visits, 38% of the inpatient days, and 50% total annualized per member monthly cost (Jenkins and Torrisi, 1995). Nurse managed centers (NMCs) with NP-provided care have demonstrated significant savings, less costly interventions, and fewer emergency visits and hospitalizations (Hunter, Ventura, and Keams, 1999; Coddington and Sands, 2009). A study conducted in a large HMO setting established that adding an NP to the practice could virtually double the typical panel of patients seen by a physician with a projected increase in revenue of $1.28 per member per month, or approximately $1.65 million per 100,000 enrollees annually (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, finding savings of $ .8 to 1.5 million, with a benefit-to-cost ratio of up to 15 to 1. Later, they tested two additional benefit-to-cost models using 2004-2006 data for patients receiving occupational health care from an NP demonstrating a benefit to cost ratio ranging from 2.0-8.7 to 1, depending on the method (Chenowith, Martin, Pankowski, and Raymond (2008). 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 number of studies have documented the cost-effectiveness of NPs in managing the health of older adults. Hummel and Prizada (1994) found that compared to the cost of physician-only teams, the cost of a physician-NP team long term care facility 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. 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 $197 monthly loss for residents seen by physicians alone (Burl, Bonner, Rao, and Kan, 1998). Intrator (2004) found that residents in nursing homes with NPs were less likely to develop ambulatory care-sensitive diagnoses requiring hospitalizations. Bakerjian (2008) summarized a review of 17 studies comparing nursing home residents who are patients of NPs to others, finding lower rates of hospitalization and overall costs for the NP patients. The potential for NPs to control costs associated with the healthcare of older adults was recognized by United Health (2009), which recommended that providing NPs to manage nursing home patients could result in $166 billion healthcare savings.

NP-managed care within acute-care settings is also associated with lower costs. 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.

Collaborative NP/physician management 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). The introduction of an NP model in a health system's neuroscience area resulted in over $2.4 million savings the first year and a return on investment of 1600 percent; similar savings and outcomes were demonstrated as the NP model was expanded in the system (Larkin, 2003). Boling (2009) cites an intensive short-term transitional care NP program documented by Smigleski et al through which healthcare costs were decreased by 65% or more after enrollment, as well as the introduction of an NP model in a system's cardiovascular area associated 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, 2013) for further discussion.

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