Quality of Nurse Practitioner Practice

Nurse practitioners (NPs) are high quality health care providers who practice in primary care, ambulatory, acute care, specialty care, and long-term care. They are registered nurses prepared with specialized advanced education and clinical competency to provide health and medical care for diverse populations in a variety of settings. A graduate degree is required for entry-level practice. The NP role was created in 1965 and over 45 years of research consistently supports the excellent outcomes and high quality of care provided by NPs. The body of evidence supports that the quality of NP care is at least equivalent to that of physician care. This paper provides a summary of a number of important research reports supporting the NP.

Avorn, J., Everitt, D.E., & Baker, M.W. (1991). The neglected medical history and therapeutic choices for abdominal pain. A nationwide study of 799 physicians and nurses. Archives of Internal Medicine, 151(4), 694-698.
A sample of 501 physicians and 298 NPs participated in a study by responding to a hypothetical scenario regarding epigastric pain in a patient with endoscopic findings of diffuse gastritis. They were able to request additional information before recommending treatment. Adequate history-taking resulted in identifying use of aspirin, coffee, cigarettes, and alcohol, paired with psychosocial stress. Compared to NPs, physicians were more likely to prescribe without seeking relevant history. NPs, in contrast, asked more questions and were less likely to recommend prescription medication.

Bakerjian, D. (2008). Care of nursing home residents by advanced practice nurses: A review of the literature. Research in Gerontological Nursing, 1(3), 177-185.
Bakerjian conducted and extensive review of the literature, particularly of NP-led care. She found that long-term care patients managed by NPs were less likely to have geriatric syndromes such as falls, UTIs, pressure ulcers, etc. They also had improved functional status, as well as better managed chronic conditions.

Brown, S.A. & Grimes, D.E. (1995). A meta-analysis of nurse practitioners and nurse midwives in primary care. Nursing Research, 44(6), 332-9.
A meta-analysis of 38 studies comparing a total of 33 patient outcomes of NPs with those of physicians demonstrated that NP outcomes were equivalent to or greater than those of physicians. NP patients had higher levels of compliance with recommendations in studies where provider assignments were randomized and when other means to control patient risks were used. Patient satisfaction and resolution of pathological conditions were greatest for NPs. The NP and physician outcomes were equivalent on all other outcomes.

Congressional Budget Office. (1979). Physician extenders: Their current and future role in medical care delivery. Washington, D.C.: US Government Printing Office.
As early as 1979, the Congressional Budget Office reviewed findings of the numerous studies of NP performance in a variety of settings and concluded that NPs performed as well as physicians with respect to patient outcomes, proper diagnosis, management of specified medical conditions, and frequency of patient satisfaction.

Cooper, M.A., Lindsay, G.M., Kinn, S., Swann, I.J. (2002). Evaluating emergency nurse practitioner services: A randomized controlled trial. Journal of Advanced Nursing, 40(6), 771-730.
A study of 199 patients randomly assigned to emergency NP-led care or physician-led care in the U.K. demonstrated the highest level of satisfaction and clinical documentation for NP care. The outcomes of recovery time, symptom level, missed work, unplanned follow-up, and missed injuries were comparable between the two groups.

Ettner, S.L., Kotlerman, J., Abdelmonem, A., Vazirani, S., Hays, R.D., Shapiro, M., et al. (2006). An alternative approach to reducing the costs of patient care? A controlled trial of the multi-disciplinary doctor-nurse practitioner (MDNP) model. Medical Decision Making, 26, 9-17.
Significant cost savings were demonstrated when 1207 patients in an academic medical center were randomized to either standard treatment or to a physician-NP model.

Horrocks, S., Anderson, E., Salisbury, C. (2002). Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors. British Medical Journal, 324, 819-823.
A systematic review of 11 randomized clinical trials and 23 observational studies identified data on outcomes of patient satisfaction, health status, cost, and/or process of care. Patient satisfaction was highest for patients seen by NPs. The health status data and quality of care indicators were too heterogeneous to allow for meta-analysis, although qualitative

comparisons of the results reported showed comparable outcomes between NPs and physicians. NPs offered more advice/information, had more complete documentation, and had better communication skills than physicians. NPs spent longer time with their patients and performed a greater number of investigations than did physicians. No differences were detected in health status, prescriptions, return visits, or referrals. Equivalency in appropriateness of studies and interpretations of x-rays were identified.

Laurant, M., Reeves, D., Hermens, R., Braspenning, J., Grol, R., & Sibbald, B. (2006). Substitution of doctors by nurses in primary care. Cochrane Database of Systematic Reviews. 2006, Issue 1.
This meta-analysis included 25 articles relating to 16 studies comparing outcomes of primary care nurses (nurses, NPs, clinical nurse specialists, or advance practice nurses) and physicians. The quality of care provided by nurses was as high as that of the physicians. Overall, health outcomes and outcomes such as resource utilization and cost were equivalent for nurses and physicians. The satisfaction level was higher for nurses. Studies included a range of care delivery models, with nurses providing first contact, ongoing care, and urgent care for many of the patient cohorts.

Lenz, E.R., Mundinger, M.O., Kane, R.L., Hopkins, S.C., & Lin, S.X. (2004). Primary care outcomes in patients treated by nurse practitioners or physicians: Two-year follow-up. Medical Care Research and Review 61(3), 332-351.
The outcomes of care in the study described by Mundinger, et al. in 2000 (see below) are further described in this report including two years of follow-up data, confirming continued comparable outcomes for the two groups of patients. No differences were identified in health status, physiologic measures, satisfaction, or use of specialist, emergency room, or inpatient services. Patients assigned to physicians had more primary care visits than those assigned to NPs.

Lin, S.X., Hooker, R.S., Lens, E.R., Hopkins, S.C. (2002). Nurse practitioners and physician assistants in hospital outpatient departments, 1997-1999. Nursing Economics, 20(4), 174-179.
Data from the National Hospital Ambulatory Medical Care Survey (NHAMCS) were used to identify patterns of NP and PA practice styles. NPs were more likely to see patients alone and to be involved in routine examinations, as well as care directed towards wellness, health promotion, disease prevention, and health education than PAs, regardless of the setting type. In contrast , PAs were more likely to provide acute problem management and to involve another person, such as a support staff person or a physician.

Mundinger, M.O., Kane, R.L., Lenz, E.R., Totten, A.M., Tsai, W.Y., Cleary, P.D., et al. (2000). Primary care outcomes in patients treated by nurse practitioners or physicians: A randomized trial. Journal of the American Medical Association, 283(1), 59-68.
The outcomes of care were measured in a study where patients were randomly assigned either to a physician or to an NP for primary care between 1995 and 1997, using patient interviews and health services utilization data. Comparable outcomes were identified, with a total of 1316 patients. After six months of care, health status was equivalent for both patient groups, although patients treated for hypertension by NPs had lower diastolic values. Health service utilization was equivalent at both 6 and 12 months and patient satisfaction was equivalent following the initial visit. The only exception was that at six months, physicians rated higher on one component (provider attributes) of the satisfaction scale.

Newhouse, R. et al (2011). Advanced practice nurse outcomes 1999-2008: A systematic review. Nursing Economic$, 29 (5), 1-22.
The outcomes of NP care were examined through a systematic review of 37 published studies, most of which compared NP outcomes with those of physicians. Outcomes included measures such as patient satisfaction, patient perceived health status, functional status, hospitalizations, ED visits, and bio-markers such as blood glucose, serum lipids, blood pressure. The authors conclude that NP patient outcomes are comparable to those of physicians.

Office of Technology Assessment. (1986). Nurse practitioners, physician assistants, and certified nurse midwives: A policy analysis. Washington D.C.: US Government Printing Office.
The Office of Technology Assessment reviewed studies comparing NP and physician practice, concluding that, "NPs appear to have better communication, counseling, and interviewing skills than physicians have." (p. 19) and that malpractice premiums and rates supported patient satisfaction with NP care, pointing out that successful malpractice rates against NPs remained extremely rare.

Ohman-Strickland, P.A., Orzano, A.J., Hudson, S.V., Solberg, L.I., DiCiccio-Bloom, B., O'Malley, D., et al. (2008). Quality of diabetes care in family medicine practices: Influence of nurse-practitioners and physician's assistants. Annals of Family Medicine, 6(1), 14-22.
The authors conducted a cross-sectional study of 46 practices, measuring adherence to ADA guidelines. They reported that practices with NPs were more likely to perform better on quality measures including appropriate measurement of glycosylated hemoglobin, lips, and microalbumin levels and were more likely to be at target for lipid levels.

Prescott, P.A. & Driscoll, L. (1980). Evaluating nurse practitioner performance. Nurse Practitioner, 1(1), 28-32.
The authors reviewed 26 studies comparing NP and physician care, concluding that NPs scored higher in many areas. These included: amount/depth of discussion regarding child health care, preventative health, and wellness; amount of advice, therapeutic listening, and support offered to patients; completeness of history and follow-up on history findings; completeness of physical examination and interviewing skills; and patient knowledge of the management plan given to them by the provider.

Roblin, D.W., Becker, R., Adams, E.K., Howard, D. H., & Roberts, M.H. (2004). Patient satisfaction with primary care: Does type of practitioner matter? Medical Care, 42(6), 606-623.
A retrospective observational study of 41,209 patient satisfaction surveys randomly sampled between 1997 and 2000 for visits by pediatric and medicine departments identified higher satisfaction with NP and/or PA interactions than those with physicians, for the overall sample and by specific conditions. The only exception was for diabetes visits to the medicine practices, where the satisfaction was higher for physicians.

Sacket, D.L., Spitzer, W. O., Gent, M., & Roberts, M. (1974). The Burlington randomized trial of the nurse practitioner: Health outcomes of patients. Annals of Internal Medicine, 80(2), 137-142.
A sample of 1598 families were randomly allocated, so that two-thirds continued to receive primary care from a family physician and one-third received care from a NP. The outcomes included: mortality, physical function, emotional function, and social function. Results demonstrated comparable outcomes for patients, whether assigned to physician or to NP care. Details from the Burlington trial were also described by Spitzer, et al (see below).

Safriet, B. J. (1992). Health care dollars and regulatory sense: The role of advanced practice nursing. Yale Journal on Regulation, 9(2).
The full Summer 1992 issue of this journal was devoted to the topic of advanced practice nursing, including documenting the cost-effective and high quality care provided, and to call for eliminating regulatory restrictions on their care. Safriet summarized the OTA study concluding that NP care was equivalent to that of physicians and pointed out that 12 of the 14 studies reviewed in this report which showed differences in quality reported higher quality for NP care. Reviewing a range of data on NP productivity, patient satisfaction, and prescribing, and data on nurse midwife practice, Safriet concludes "APNs are proven providers, and removing the many barriers to their practice will only increase their ability to respond to the pressing need for basic health care in our country" (p. 487).

Spitzer, W.O., Sackett, D.L., Sibley, J.C., Roberts, M., Gent, M., Kergin, D.J., Hacket, B.D., & Olynich, A. (1974). The Burlington randomized trial of the nurse practitioner. New England Journal of Medicine, 290 (3), 252-256.
This report provides further details of the Burlington trial, also described by Sackett, et al. (see above). This study involved 2796 patients being randomly assigned to either one of two physicians or to an NP, so that one-third were assigned to NP care, from July 1971 to July 1972. At the end of the period, physical status and satisfaction were comparable between the two groups. The NP group experienced a 5% drop in revenue, associated with absence of billing for NP care. It was hypothesized that the ability to bill for all NP services would have resulted in an actual increased revenue of 9%. NPs functioned alone in 67% of their encounters. Clinical activities were evaluated and it was determined that 69% of NP management was adequate compared to 66% for the physicians. Prescriptions were rated adequate for 71% of NPs compared to 75% for physicians. The conclusion was that "a nurse practitioner can provide first-contact primary clinical care as safely and effectively as a family physician" (p. 255).