Neonatal Nurse Practitioner Workforce

Position Statement
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The purpose of this position paper is to define the contribution of the neonatal nurse practitioner (NNP) as an advanced practice registered nurse (APRN) in the neonatal workforce environment and to propose a framework and factors for consideration in assessing workload. The development of the NNP role has been the focus to date. In the current economic and healthcare environment, it has become necessary to qualify and quantify the activity and productivity of NNPs—as individuals, as groups in practice settings, and as a professional entity.

The Institute of Medicine (IOM) report, *The Future of Nursing: Leading Change, Advancing Health,* emphasizes the integral effect the profession of nursing has, and can have, on the care and well-being of people in our society (IOM, 2010). Limited evidence exists to provide a design, an evaluation tool, or adequate benchmark of the NNP workforce to measure the level of safe and holistic care provided. *Principles of Nurse Staffing,* published by the American Nurses Association (ANA), considers "principles to serve as the guidelines for determining a nurse staffing solution…that can be applied to any level or setting of nursing, and form the basis of the activity or policy of specialty nursing associations around staffing" (ANA, 2012). As the unifying voice of NNPs, NANNP recommends these principles as a basis for consideration in developing an NNP workforce staffing plan and discusses limitations and opportunities.

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Association Position

The National Association of Neonatal Nurse Practitioners (NANNP) recognizes the NNP as a nurse leader, clinical expert, educator, researcher, consultant, and advocate for neonates and their families. Because state regulations for licensure vary, the NNP practices as an independent practitioner in collaboration with or under the supervision of a licensed and credentialed neonatologist (APRN Consensus Work Group, 2008). As a healthcare provider within an interprofessional team, the NNP functions in many settings that include but are not limited to transport, all levels of neonatal inpatient care, acute and chronic care, and outpatient care. He or she may practice in academic and private community settings.

NANNP acknowledges the limited evidence upon which to recommend patient-to-NNP ratios or caseload ranges for workload management. NNP workload must take into account the clinical setting, patient acuity, resources, census, team workload distribution, flexibility in role expectation, shift length, and competence level. The Accreditation Council for Graduate Medical Education (ACGME) has developed standards for the residency education and practice, some of which may be applicable to the NNP role (ACGME, 2010). In addition, there is evidence that suggests fatigue and stress of continuous management in acute situations may pose risks to effective decision making (NANNP, 2012a). Taking these factors into account the following guidelines have been established:

- Workload should take into account the NNP's level of competence and experience—where he or she is on the journey from novice to expert (NANNP, 2010).

- Workload should take into account the emerging body of evidence related to fatigue and its impact on safety and quality (The Joint Commission, 2011; ANA, 2006a; ANA, 2006b).

- For NNP caseloads, consideration should be given to the level of patient acuity and impact of other functional responsibilities that may occupy the attention and concentration of the NNP (NANNP, 2012a).

- Site-specific workloads should be supported through outcomes monitoring, including
  – average amount of time spent per delivery
  – review of delivery room resuscitation documentation and adherence to the neonatal resuscitation program (NRP)
  – review of adverse events
  – length of time spent on discharge management
  – customer complaints and grievances
  – amount and length of time spent with documentation
  – parent response regarding satisfaction (i.e., amount of time the NNP spent with families, how well informed the NNP was in conveying information about the baby's condition and plan of care)
  – billing/charges (i.e., denials based upon documentation issues)

Background and Significance

The role of the NNP emerged in the 1970s, shortly after neonatology was recognized as a new science and a subspecialty of pediatrics. Initially, pediatric nurse practitioners, or neonatal nurse clinicians, expanded their knowledge base and extended their procedural skill level through in-house training programs to meet the needs of the NICU patient. As the volume of babies admitted to a NICU/neonatal special care unit (NSCU) grew and the need for expanded skill increased, hospitals responded by developing certificate programs to prepare neonatal nurse practitioners. In 1983, a national certification program with an examination based on a standardized level of knowledge and skill was initiated. Today, NNPs are required to have graduate degree educational preparation and become licensed through the state boards of nursing to function within a prescribed scope of practice. Most states require national certification to be eligible for licensure. Because national professional organizations establish the education and certification standards, there is some variation in the NNP role. This process accounts for the inconsistency in the scope of practice for APRNs (APRN Consensus Work Group, 2008).

In the *Guidelines for Perinatal Care,* 6th edition*,* the American Academy of Pediatrics (AAP) and NANNP jointly endorse the advanced practice role of the NNP to provide expanded care delivery to neonatal patients and their families (AAP & American College of Obstetricians and Gynecologists, 2007). This role is vital to the thoughtful holistic direction of patient care, consultation, education, performance, and outcome improvement, research, and advocacy.

In most healthcare organizations, NNPs are credentialed by administration and the medical staff governing body and are held accountable to the medical staff bylaws as allied health professionals. NNPs orient to the role and maintain an annual competency. In an effort to standardize the integration process from the continued education academic environment to the practice setting, NANNP developed and published a framework and recommendations for NNP orientation and training for competency (NANNP, 2010; see Appendix A)

There are many opportunities for expanding the function of the NNP. Roles mentioned in the recent NANNP survey include (NANNP, 2012b):

- post-discharge and primary healthcare provider for post-NICU infants

- case management—provides continuity of care across healthcare settings and communities

- expert consultants—provides consults to other units such as emergency room, pediatrics, radiology, operating room, primary pediatric/family medicine practices, prenatal services, etc.

It has been repeatedly demonstrated that NNPs provide safe, cost-effective care to neonatal patients (Bissinger & Alfred, 1997; Karlowicz & McMurray, 2000; Juretschke,

2003; Brown & Grimes, 1995; Brooten, Brooks, & Youngblut, 1998). Current research supports the positive effect APRNs have on patient outcomes and healthcare costs (Brooten, Brooks, & Youngblut, 1998; Mundinger, 2000). As the number of residents decrease in academic centers, NNPs have increased their workload to include number of patients, deliveries attended, and number of consultations—prenatal and postnatal (Zupancic & Richardson, 2002). Because neonates may be admitted to other inpatient units, such as the pediatric intensive care unit or cardio-thoracic intensive care unit, and travel to ancillary departments, NNPs may be called to those areas for consultations, care, resuscitation, and procedures. This expectation can make prioritizing needs and responsibilities challenging and may adversely impact the work flow and level of concentration of the NNP and healthcare team.

There is a scarcity of data to suggest the appropriate workload for an NNP. The complexity of the NNP role, as well as the variety of practice settings, variance in levels of acuity, and responsibilities among practice settings, make it difficult to compare and contrast appropriate workload management and assignments. To date, much of the research on the effects of nursing workload on patient outcomes has concentrated on the numbers of nurses or staff mix on patient units or in hospitals.

Work to date on APRN workload is heavily concentrated on comparison of the APRN and physician time spent with patients during office visits or in hospital units (Juretschke, 2003; Brown & Grimes, 1995; Brooten, Youngblut, Naylor, & York, 2003; Brooten, Youngblut, Kutcher, & Bobo, 2004). Time and motion studies of APRN roles have been limited and less useful because APRNs are often combined with physicians or residents and only direct patient care time is included, thus excluding large volumes of time spent in the roles the NNP fulfills that are not associated with direct patient care (Brooten, Youngblut, Kutcher, & Bobo, 2004).

Recent data from NANNP's *NNP Workforce Survey* indicate that the average patient load based on NNP respondents is largely dependent upon the differing responsibilities of NNPs in each unit (NANNP, 2012b). Scope of responsibilities specifically detailed in the survey questions included delivery attendance, consultation, patient management, transport, and teaching.

The structure of the neonatal workforce will continue to adapt and evolve. There is a need for reconfiguration of the infrastructure such that neither the standards of care provision nor the education and training of medical staff are compromised. To meet the needs of patients and families, a collaborative team approach to care is widely accepted as the most viable solution (Starmer et al., 2010). Bosque describes one such example of a team approach to neonatal care in a tertiary care NICU using a model of collaboration and efficiency between NNPs and neonatologists (Bosque, 2011).

Recognized challenges that confront the individual NNP in the process of fully embracing and fulfilling role expectations include the following:

- Increased patient workload at the bedside that is the result of demand for providers outpacing the supply. Contributing factors include
  - unequal regional distribution of NNPs
  - difficulties (length of time) in recruiting NNPs
  - retention of NNPs
  - increased patient census and acuity per NNP as a result of decreased medical residency hours.

- Practice and location-specific expectations that impact a sense of role fulfillment and satisfaction include
  - shift lengths up to 24 hours
  - additional expectations such as attendance in the delivery room; internal and external transporting of neonates to and from ancillary departments and regional facilities; and precepting students, residents, physician assistants and less experienced NNPs.

- Limitations on the scope of practice may be imposed by state nursing practice acts, which create variance among NNPs when utilizing professional standardized education, competency, and measurement benchmarks to improve patient outcomes and evidence-based practice.

- Reimbursement inequities as a result of federal and state regulations, local employment structures, and contractual arrangements with third-party payers. It is incumbent on the NNP to be aware of how professional billing occurs in their practice setting.

- Preparation for practice issues such as graduate entry programs, NNP residency programs, and the emergence of the Doctor of Nursing Practice degree. The amount of high-risk neonatal practice experience is a determinant of the length of time that a new NNP will need to become personally and experientially competent to independently manage a caseload of patients. Residency programs may expedite the development of the new NNP. Experienced NNPs will be needed to coach and precept novice and beginner NNPs.

The NNP must be prepared to successfully engage in interprofessional collaboration. It is important to have a working knowledge of and relationship with colleagues on the interprofessional healthcare team to allow for optimal patient and family outcomes. An understanding of the perspectives and contributions of the various care providers at the bed side is important. In addition to the collaborating neonatologist, the colleagues who interact as providers with the NNP in academic institutions include neonatal fellows, medical or pediatric residents, and physician assistants (see Appendix B).

Professional development should be a component of the functional role of the NNP regardless of the setting. The ANA American Nurses Credentialing Center (ANCC) Magnet Designation Program expects that there will be a professional practice model

that is followed by professional nurses in the execution of practice (ANCC, 2012). There are many models that can be utilized or developed. Examples of practice models that facilities may use or adapt are the synergy model; the logic model for APN role development, implementation and evaluation; or any nursing theorist whose concept of care most resembles the mission and values of the healthcare facility/organization (Kaplow, 2008). NNPs should participate in the credentialing and peer review process of the organization. NNPs should contribute input to the development of the infrastructure of professional nursing. It is a vital component of shared governance and the incorporation of the voice of nurse professionals within an organization.

The ANA *Principles for Nurse Staffing* recommend identifying the core components of staffing to assist in the qualification and quantification of staffing (ANA, 2012). For NNPs, the core components might include factors as listed below:

- level of neonatal care (i.e., Level I, II, III, and IV [AAP Committee on Fetus and Newborn, 2012] or Level I, IIA, IIB, IIIA, IIIB, and IIIC [Stark & AAP Committee on Fetus and Newborn, 2004])

- census

- patient acuity

- procedure(s) per patient or procedure log per NNP

- worked hours per patient day

- continuity of care

- rapid admissions/deliveries, turnovers, and/or discharges

- consultations

- transports—traveling internally per ancillary department or externally to and from regional facilities

- outpatient visits, missed appointments, and interprofessional consultations

- consults with interprofessional services and inpatient units

- quality of work environment

- evidence-based critical pathways

- available technology—in house or external

- communication and team collaboration

- discharge planning

- transitional care post-discharge

- evaluation of healthcare practices, policies, and procedures

- availability of ancillary support (i.e., social worker, lactation, occupational therapist, physical therapist, hospice, palliative care, chaplain, parent advisor)

- evolving evidence.

The value of the NNP role as a provider can be measured in a variety of ways during the inpatient, transport, and outpatient care of the baby. Continuity of care by the NNPs may contribute to a decrease in the length of stay and savings in cost of care by helping to decrease hospital-acquired infections, increase revenue as a result of billing for the provision of direct care, and improve patient and family satisfaction as a result of the continuity of care and communication with the parents.

Recommendations

NNP workload should no longer only be viewed as hands-on patient care in the delivery room and at the bedside. Workloads must include dedicated time for the NNP to fully participate in personal and professional development of leadership, process improvement, clinical practice, consultation, research, education, and advocacy.

NANNP recommends the following guidelines be implemented in the development of the NNP workload for each practice:

1. NNPs should have personal professional accountability for mental acumen and physical fitness to manage flexible, acute situations for multiple neonatal patients.

2. Patient caseload should be consistent with the level of acuity as well as competence and capability of the NNP. Caseloads should be flexible and take into account additional NNP responsibilities such as mentoring, attending deliveries, and performing procedures. A general guideline for managing patient caseloads includes:

   - All levels of neonatal care (AAP Committee on Fetus and Newborn, 2012); previously provided by Stark & AAP Committee on Fetus and Newborn, 2004)
     - Initial minimum caseload of six-patients for a novice NNP per ACGME standards for house staff (ACGME, 2010) (See Appendix A)

   - Level IV Regional NICU, Level III NICU, Level II NSCU (AAP Committee on Fetus and Newborn, 2012) and previously described Level III A/B/C NICU, Level II A/B NSCU (Stark & AAP Committee on Fetus and Newborn, 2004)

- Up to a maximum 10-patient caseload for advanced beginner to expert NNPs, when activity or acuity is high (NANNP, 2012b)
- Greater than 10-patient caseloads may be managed by proficient and expert NNPs when the activity or acuity is decreased or when providing oversight of other providers.

3. A percentage of paid protected work time should be dedicated to professional development (i.e., minimum of 10%).

NANNP recommends further research for the following areas:

- the impact of workload levels for NNPs with consideration given to years of experience, APN-to-patient ratios, competence, shift length, NICU/NSCU level and patient acuity, and region of the country

- work to improve access to billing and reimbursement for NNPs.

An additional consideration is the opportunity for the patient and family to provide information, observation, and perspective relative to their experience during the hospitalization; and the sense of their relationship with the staff in the unit. Many NICU/NSCUs utilize the *How's Your Baby* Parent Survey to assess the contribution of the staff to the baby and family experience during the inpatient stay in the NICU/NSCU (Edwards, 2009). It has been proposed that a specific question be added to the survey to ascertain the NNP's contribution to the delivery of care to the baby and parents as well as the education and preparation from the NNP to the care of the baby upon discharge to home.

Conclusions

This position paper is an initial discussion of workforce description and workload recommendations. Although the evidence is limited, the factors for consideration are extensive. It is imperative that the study of the NNP workforce and workload continue. The value of the NNP should be acknowledged through study, benchmarking, and global dissemination. The social and ethical commitment of the NNP results in greater access to healthcare, the provision of care, the conserving of healthcare cost, the increase in the quality of care, and the satisfaction and confidence of family as they become care providers upon discharge to home.

Providing sustainable solutions to the workforce and training challenges facing neonatal services while ensuring the delivery of high-quality care is complicated. Some units are considering new roles, whereas others are evaluating ways to improve current roles. Both approaches require long-term planning and investment and a clear vision of the skills and knowledge required at each level of the workforce. NNPs play a key role in the provision of neonatal care. More research is needed to determine the appropriate workload of the NNP that is required to achieve optimal patient outcomes by specific patient group, level of severity, and level of complexity of care.

Appendices

A. Professional Model for the Advanced Practice Nurse/Neonatal Nurse Practitioner: Workload (NANNP, 2010; NANNP, 2012b; National Organization of Nurse Practitioner Faculties (NONPF), 2012)

B. Professional Role Delineation of the Physician (MD/DO), Neonatal Nurse Practitioner (NNP), and Physician Assistant (PA) (APRN Consensus Work Group, 2008; ACGME, 2010; Centers for Medicare & Medicaid Services, 2010; Educational Portal, 2011; Byrne, 2002)

Appendix A

Professional Model for the Advanced Practice Nurse: Workload

Role	NP Core Competencies	Levels of Competence	Years Experience	Caseload*
Acute APRN - 24/7 provider - specialty	1. Scientific Foundation	Beginner	< 1	Minimum of 6 with oversight**
	2. Leadership	Advanced Beginner	1–2	6–10
	3. Quality	Competent	2–5	10
	4. Practice Inquiry	Proficient	5–10	10 Up to 15 (when providing supervision/oversight of lesser experienced NNPs/residents/fellows or when patient acuity is decreased)
	5. Technology and Information Literacy	Expert	>10	Same as above
	6. Policy			
	7. Health Delivery System			
	8. Ethics			
	9. Independent Practice			

* Acuity determined by: complex multisystem involvement, acute care, intermediate care, crisis events, resuscitation.

** Consistent with the Accreditation Council for Graduate Medical Education (ACGME) standards for residents (ACGME, 2010).
Functions include H&Ps, documentation, rounds, consults, attendance at deliveries, surgical management, transports, prescriptive/TPN, diagnostics, labs, well-baby evaluations.

Sources: NANNP, 2012a; NANNP, 2012b; NONPF, 2012

Appendix B

**Professional Role Delineation of the Physician (MD/DO), Neonatal Nurse Practitioner (NNP)
and Physician Assistant (PA) in the NICU/NSCU**

	Neonatal Nurse Practitioner	Physician Assistant in the NICU/NSCU	Pediatric Resident/Fellow in the NICU/NSCU
Education	• **Minimum entry level** Master's degree in Nursing (MSN, MN) required, with a concentration in neonatal care • Clinical doctorate degree available, but not currently required—Doctor of Nursing Practice (DNP)	• **Minimum entry level**—Certificate degree (two programs remain) • Associate degree • Baccalaureate degree • (BPAS) • 80% of programs offer a Master's degree in Physician Assistant Studies (MPAS), Health Science (MHS) or Medical Science (MMSc) • Clinical doctorate degree available, but not required: Doctor of Science Physician Assistant (DScPA)	• **Minimum entry level**—Baccalaureate degree • Medical doctor (MD) or Doctor of Osteopathy (DO) **Neonatal Fellow** • Baccalaureate degree • Medical doctor (MD) or Doctor of Osteopathy (DO) • Completed pediatric internship and residency

Training	• Specialist in Neonatal Care
	• Nursing model
	• Master's
	  ○ 18-24 months full time study
	  ○ 600 hours of neonatal clinical care minimum
	  ○ All clinical hours specific to neonatal care
	  ○ Thesis or Scholarly Project
	• Doctor of Nursing Practice
	  ○ Post-master's
	    ▪ 12-24 months of full-time study
	    ▪ 1,000 hour clinical minimum
	  ○ Post-baccalaureate
	    ▪ 36 months of full time study
	    ▪ 1,000 hour clinical minimum
	  ○ Tripartite Immersion Practicum Clinical + Capstone Project
		• Generalist; may choose to specialize; requires post graduate training and specialty certification
		• Medical Model
		• 26 months of full time study
		• 600–1,000 hour clinical minimum
		• Clinical hours may not be specific to neonatal care
			NICU Pediatric Resident/Fellow
			
			• Specialist in Pediatric Medicine
			• Medical Model
			• 4 years medical or osteopathic school
			• Successfully passed 1st year of pediatric residency program (2nd year resident)
			• Clinical hrs may not be specific to neonatal care, but all hours are specific to pediatric care
			
			Neonatal Fellow
			
			• Specialist in Pediatric Medicine
			• Medical Model
			• 4 years medical or osteopathic school
			• Successfully passed pediatric residency program
			• Fellowship clinical hours (3 years) specific to neonatal care

Certification	• National Certification Corporation (NCC)	• National Commission on Certification of Physician Assistants (NCCPA) • Must pass the Physician Assistant National Certifying Exam (PANCE) • Log 100 CME hours and re-register certificate the NCCPA every 2 years • Specialty certification must be renewed every 6 years	**NICU Pediatric Resident/Fellow** • Successfully pass USMLE (US Medical Licensing Exam) Step 1 & 2 • Successfully pass USMLE step 3 during 1st year of residency **Neonatal Fellow** • Successfully complete 3 year internship and residency in pediatric care
Title	NNP-BC or APRN (Neonatal Nurse Practitioner-Board Certified or Advanced Practice Registered Nurse) Titles may vary by state	PA-C (Physician Assistant–certified)	MD or DO
Licensure	State	State	State
Prescriptive Authority	• DEA (Drug Enforcement Agency) • Each of the 50 states has different laws regarding the prescription of medications by "mid-level" practitioners (which include NNPs & PAs) • 39/50 states have full prescriptive authority for NPs (schedules II-V); 9 states have some restriction on prescriptive authority; 2 states do not allow NPs prescriptive authority • Co-signature of collaborating physician is not required in any state on any prescription that an NP is authorized to write	• DEA • Each of the 50 states has different laws regarding the prescription of medications by "mid-level practitioners (which include NNPs & PAs) • Florida, Kentucky, Puerto Rico and US Virgin Islands—PAs are not allowed to prescribe, order, dispense or administer any controlled substances	• DEA • Full prescriptive authority (schedules II-V)
Reimbursement/ billing	• Reimbursement rates vary between insurances ○ Medicare/Medicaid reimbursement rates (2010) are at 85% of the physician rate ○ Some private and state insurances reimburse up to 100% of the physician rate • Billing practices vary among practices	• Reimbursement rates vary between insurances ○ Medicare/Medicaid reimbursement rates are at 85% of the physician rate ○ Some private and state insurances reimburse up to 100% of the physician rate	• No reimbursement or billing—all neonatal services are billed for by the attending physician

	• NNPs part of the same practice group as their physician colleagues often bill for their services independently • NNPs hired by hospitals or other practice groups often negotiate billing with their physician colleagues • Few NNP groups do not bill for their services at all; their physician colleagues bill for all neonatal services	• Billing practices vary among practices • Payments are paid directly to the supervising physician in most states	
Scope of Practice	• Independent • Few states require an identified collaborating physician	Dependent upon attending physician sponsor/supervision	Dependent upon attending physician sponsor/supervision
Role	• Advanced practice RN • Professional development • Scholarly inquiry-translator of evidence to bedside care • Faculty/Educator/Advocate (patient families, RN, RT, NNP, PA, residents) • Manager of health care delivery systems • Coordinator quality healthcare practices	• Mid-level medical practitioner • Direct generalized patient care manager • Educator (patients, families, PAs)	Medical Training Role
Value	• Advanced practice RN • Global/holistic approach to care • Cost effective alternative to traditional physician care • Increased patient/family satisfaction when compared with PAs & physicians • Translation of evidence- based practice to bedside care	• Medical professional care • Cost effective alternative to traditional physician care • Originally primary care focused, recently limited specialties available in acute care	• Establish knowledge and skills to achieve competency toward physician specialty board certification

Sources: APRN Consensus Work Group & National Council of State Boards of Nursing APRN Advisory Committee, 2008; ACGME, 2010; Centers for Medicare & Medicaid, 2010; Educational Portal, 2011; Byrne, 2010.

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