National Association of Neonatal Nurses

National Association of Neonatal Nurse Practitioners
A division of NANN

Education Standards and Curriculum Guidelines for Neonatal Nurse Practitioner Programs

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Introduction

Since the mid-1970s neonatal nurse practitioners (NNPs), previously known as neonatal nurse clinicians, have demonstrated their value in the provision of health care to high-risk infants and their families. Requirements for education, licensure, accreditation, and certification of NNPs have been fluid, displaying wide variations among practice jurisdictions. NNPs have consistently delivered high-quality care and have remained committed to maintaining standards of excellence as they fulfill increasingly complex roles within the healthcare system.

NNPs are respected as professionals and have earned the trust of interprofessional colleagues and the patients/families they serve. Trusted professionals must engage in continuous scrutiny to ensure they keep pace with the ever-changing needs within the healthcare system and must be willing to revise both preparation and requirements for entry-level and continuing practice, as reflected by the most current evidence. This is especially true in the current healthcare environment, where nurses and NNPs are faced with tumultuous changes in the way care is provided.

Professional accountability begins with ensuring the quality of nurse practitioners' educational preparation. It is the responsibility of the professional organizations for advanced practice nursing (American Association of Colleges of Nursing [AACN], National Organization of Nurse Practitioner Faculties [NONPF]) to define the standards for graduate nursing education in the nurse practitioner role. Recognizing that NNPs are part of the larger group of advanced practice registered nurses (APRNs), the National Association of Neonatal Nurses (NANN) and the National Association of Neonatal Nurse Practitioners (NANNP) collaborate with a number of regulatory, licensing, education, and credentialing agencies to produce the most current education and curriculum standards. In response to the expanding numbers and responsibilities of APRNs, the APRN Consensus Work Group and the National Council of State Boards of Nursing (NCSBN) APRN Advisory Committee met in 2008 and formed the APRN Joint Dialogue Work Group. They developed an APRN regulatory model to clarify and ensure uniformity of APRN regulations. Their consensus report "defines APRN practice, describes the APRN regulatory model, identifies the titles to be used, defines specialty practice and preparation, describes the emergence of new roles and population foci, and presents strategies for implementation" (APRN Consensus Work Group & NCSBN APRN Advisory Committee, 2008, p. 5). In addition, the APRN Joint Dialogue Work Group illustrated a need for the establishment of a "formal communication mechanism, LACE, which includes those regulatory organizations that represent APRN **l**icensure, **a**ccreditation, **c**ertification, and **e**ducation entities" to ensure ongoing effective dialogue among all APRN stakeholders in these areas (p. 16).

According to AACN, "practice demands associated with an increasingly complex healthcare system created a mandate for reassessing the education for clinical practice of all health professionals, including nurses" (AACN, 2006, p. 4). In 2002 AACN convened a task force to investigate the desirability of the practice doctorate in nursing (DNP). The task force proposed doctoral-level education as an entry-level requirement for APRNs. This recommendation was approved by the AACN membership in its 2006 document, *The Essentials of Doctoral Education for Advanced Nursing Practice* (AACN, 2006).

AACN published *The Essentials of Nursing Education for the Doctorate of Nursing Practice* (2006) to illustrate "curricular expectations that will guide and shape DNP Education." The document outlines the "curricular elements and competencies that must be present in programs conferring the doctor of nursing practice degree...and addresses the foundational competencies that

are core to all advanced nursing practice roles" (AACN, 2006, p. 8). Clarifying recommendations regarding the DNP were published in 2015, which provided clarification on the DNP project, practice hours and experiences, and curriculum considerations (AACN, 2015).

Although doctoral preparation for APRNs is a worthy goal, it is not yet clear when it will become a mandatory degree for entry-level practice. In updating its *Essentials for Master's Education in Nursing* (2011), AACN acknowledges that "Master's education remains a critical component of the nursing education trajectory to prepare nurses who can address the gaps resulting from growing healthcare needs and that...these *Essentials* are core for all master's programs in nursing and provide the necessary curricular elements and framework, regardless of focus, major, or intended practice setting" (AACN, 2011, p. 3). Currently, in 2017, there are a number of NNP programs continuing to provide education and preparation at the master's level.

Although APRNs are acknowledged as integral members of the healthcare system, there remains a lack of consistency in regulations across state boundaries in the United States. The barriers to practice created by the lack of standardization exacerbate the shortage of qualified NNPs that already exists. With the release of the 2008 APRN Consensus Model, nurse practitioner (NP) organizations and educational facilities have undertaken efforts to incorporate the model's components. "Within education, NP programs have focused on changes to align educational tracks with the NP populations delineated in the model. National organizations have supported these efforts through collaborative work on the NP competencies that guide curriculum development" (NONPF, 2013, p. 5).

NONPF, with representation from the major NP organizations, has developed core competencies for the six population foci described in the APRN Consensus Model. These "NP Core Competencies integrate and build upon existing master's and DNP core competencies and are guidelines for educational programs" (NONPF, 2011, amended 2012, p.1). Each individual population focus within the broader category of advanced practice nursing is charged with delineating more specific standards of education for its own members. Thus, NANNP, a division of NANN, defines the educational and preparation standards for those pursuing the NNP role.

In conclusion, the framework for NNP education is built upon the broad standards for advanced practice nursing (AACN, 2006, 2011) and the evaluation criteria for nurse practitioner programs (National Task Force on Nurse Practitioner Education, 2016). This document reflects the consensus of the work summarized above and presented in the *Criteria for Evaluation of Nurse Practitioner Programs* (National Task Force on Quality Nurse Practitioner Education, 2016), *The Consensus Model for APRN Regulation* (APRN Consensus Work Group & NCSBN APRN Advisory Committee, 2008), *Population-Focused Nurse Practitioner Competencies* (NONPF, 2013), *The Essentials of Doctoral Education for Advanced Nursing Practice* (AACN, 2006), and *The Essentials of Master's Education in Nursing* (AACN, 2011).

This document describes the *minimum* standards necessary for preparation of NNPs. These standards are intended to be used in conjunction with other accreditation standards and tools in the evaluation of graduate educational programs or tracks and reflect updated guidelines for Evaluation Criteria for Nurse Practitioner Programs (National Task Force on Nurse Practitioner Education, 2016). This edition also adds additional information on use of simulation and addresses educational criteria regarding care of the infant through the age of 2 years.
Designing or revising programs according to the recommendations in this guideline will ensure that

graduates receive the necessary preparation to practice at the novice level. The guidelines serve as a tool for the development and evaluation of new NNP programs and as a self-study manual for existing programs. The guidelines are especially valuable in today's environment, in which hospital administrators, directors, and managers may consider replacing NNPs with other providers who have not received neonatal population–specific education. Given the educational components needed to produce a competent, novice-level NNP, it is clear that filling the gaps with providers who have a generalist education—such as physician assistants, pediatricians, or nurse practitioners educated in other population foci—is not in the best interest of providing high-quality, safe, and cost-effective neonatal care.

Each of the following *program standard statements* is followed by an elaboration that provides important background on or a rationale for the standard. The statement of the standard is identified by bold text.

I. Program Requirements

The NNP educational program must

A. be a formal neonatal nurse practitioner graduate or postgraduate (either post-master's certificate or postdoctoral) program that is awarded by an academic institution and accredited by a nursing or nursing-related accrediting organization recognized by the U.S. Department of Education or the Council for Higher Education Accreditation

B. be awarded preapproval, pre-accreditation candidacy, or accreditation status prior to the admission of students

C. be comprehensive at the graduate level

D. prepare the graduate for population-focused practice in the NNP role

E. be supported in its development, management, and evaluation by institutional resources, facilities, and services

F. prepare the graduate to be eligible to take the national NNP certification exam.

Elaboration

Nurse practitioners are described by the American Association of Nurse Practitioners (AANP) as "licensed independent practitioners who practice in ambulatory, acute, and long-term care as primary and/or specialty care providers. According to their practice population focus, NPs deliver nursing and medical services to individuals, families, and groups" (AANP, 2013).

AANP recommends that NPs complete a formal graduate education program and have a commitment to lifelong learning and professional self-development to ensure that they develop and maintain the appropriate understanding of theory and level of clinical skills. AANP clearly indicates that the graduate degree is needed for entry-level preparation and acknowledges that, although most NP programs award the master's degree, the shift toward awarding doctoral degrees is increasing. This transition has occurred as a result of a 2004 recommendation by AACN that all advanced practice nurses be prepared at the doctoral level by 2015 "with the degree title of doctor of nursing practice, or DNP" (AACN, 2004b; AANP, 2010). However, it is unclear when the doctoral degree will be mandatory for entry-level NP practice.

According to the *Consensus Model for APRN Regulation* (APRN Consensus Work Group & NCSBN APRN Advisory Committee, 2008), all APRN education programs must undergo a preapproval, preaccreditation, or accreditation process before students are admitted. The purpose of this process is to ensure that students graduating from the program will be eligible for national certification and licensure to practice and to ensure that programs meet all educational standards

before they admit students. Accredited MSN or DNP programs adding a neonatal NP track must submit a substantive change report to their accreditation body and receive a letter of change approval within the designated time period set forth by the accreditation body (Accreditation Commission for Education in Nursing, 2016; Commission on Collegiate Nursing Education, 2012).

The NNP provides population-focused health care to preterm (<37 weeks) and term neonates, and infants and children up to 2 years of age.

To implement and maintain an effective NNP program or track, there must be an adequate number of faculty, facilities, and services that support NNP students. There must be a sufficient number of faculty with the necessary expertise to teach in the NNP program. As a necessary part of the educational process, access to adequate classroom space, models, clinical simulations and audiovisual aids, computer technology, and library resources is critical. When using alternative delivery methods, a program is expected to provide or ensure that resources are available for the students' successful attainment of program objectives.

Graduates of NNP educational programs should be eligible to take the nationally recognized certification exam. This national certification will assess the broad educational preparation of the individual, including graduate core, APRN core, NNP role/core competencies, and the competencies specific to the neonatal population (NONPF, 2013; NANNP, 2014).

II. Faculty and Faculty Organization

A. NNP programs must have sufficient faculty members with the preparation and current expertise to adequately support the professional role development and clinical management courses for NNP practice.

1. **NNP program faculty members who teach the clinical components of the program must maintain current licensure, state approval to practice as an advanced practice nurse, and national certification as a neonatal nurse practitioner.**

2. **NNP program faculty must demonstrate current, ongoing experience in clinical practice as an NNP and in teaching through ongoing faculty development activities designed to meet the needs of new and continuing faculty members, including adjunct and clinical faculty (National Task Force on Quality Nurse Practitioner Education, 2016).**

B. Non-NNP faculty members must have expertise in the area in which they are teaching.

C. NNP program faculty competence must be evaluated at regularly scheduled intervals.

Elaboration

For successful implementation of the curriculum, faculty members must have the preparation, knowledge base, and clinical skills appropriate to the neonatal area. Recognizing that no individual faculty member can fill all roles, NNP programs need to maintain a sufficient number of qualified

faculty members who have the knowledge and competence appropriate to the neonatal area and who are able to meet the objectives of the program and neonatal population–focused tracks.

NNP program faculty should include a mix of individuals with expertise and emphasis in research, teaching, and clinical practice. Although it may be difficult for some faculty members to balance research, practice, and teaching responsibilities, all faculty members who teach clinical courses must maintain national certification as a neonatal nurse practitioner.

NNP faculty members may participate in or undertake various types of practice in addition to direct patient care to maintain currency in practice. Maintaining this currency is important to ensuring clinical competence in the area of teaching responsibility.

In the event that an NNP faculty member has less than 1 year of clinical or academic experience, it is expected that a senior or experienced faculty member will mentor this individual in both clinical and teaching responsibilities. Mentoring new and inexperienced faculty is a positive experience that helps NNPs transition into the role of NNP faculty educator. Opportunities for continued development in one's area of research, teaching, and clinical practice should be available to all faculty.

Similar to NNP faculty, other faculty who help support the NNP program must have the preparation, knowledge base, and clinical skills appropriate to their area of teaching responsibility.

III. Practice Experience Requirements for Prospective Students

The equivalent of 2 years of full-time clinical practice experience (within the last 5 years) in the care of critically ill neonates or infants in critical care inpatient settings is required *before a student begins clinical courses*. Students may enroll in preclinical courses while obtaining the necessary practice experience.

Elaboration

NANN recognizes that a solid foundation of clinical practice in a Level III and/or IV NICU is necessary before one assumes the advanced practice role of NNP. However, critical thinking skills needed for the care of the critically ill neonate/newborn (birth to 28 days of life) can be derived in a practice setting other than the neonatal intensive care unit (NICU). Therefore, while the majority of experience should be in a Level III and/or IV NICU, practice experience in a critical (intensive care) inpatient setting for infants (1 to 12 months of age) may be considered.

Anecdotal experience suggests that students with at least 2 years of clinical experience in the neonatal intensive care setting are more successful in transitioning to the APRN role. Although it is ideal for prospective students to complete their practice experience before beginning graduate education, maintaining this position may not be feasible in today's educational market. Appropriate clinical experience in the care of critically ill newborns or infants is essential *prior to beginning the clinical component of an NNP program.*

IV. Program Leadership

A. The director/coordinator of the NNP program must be a doctorally prepared, nationally certified nurse practitioner. He or she has responsibility for overall leadership of the program.

B. The faculty member who provides direct oversight of the neonatal-specific program content must be a nationally certified NNP, preferably prepared at the doctoral level.

C. The program faculty member must be prepared at the graduate level and must maintain currency in clinical practice, licensure, and national certification as an NNP. She or he is responsible for development of the NNP role and clinical courses.

Elaboration

The *program director/coordinator* must be doctorally prepared, should have a strong foundation in areas that support the responsibilities of leadership for the program (clinical knowledge, academic leadership, administration, and scholarship), and must be nationally certified in a particular NP population focus. She or he has academic oversight for the NNP program.

In programs with multiple tracks, although the program director/coordinator may be certified in only one population-focused area of practice, she or he is responsible for leadership of all of the NP tracks (National Task Force on Quality Nurse Practitioner Education, 2016).

The *faculty member* with direct oversight of the NNP program must be a clinically experienced, nationally certified NNP with a minimum of 2 years of NNP academic and/or clinical experience. Doctoral preparation is preferable. She or he provides direct supervision for the NNP track; provides curriculum oversight for the population-focused content of the NNP education program; and participates in the identification, development, teaching, and evaluation of the population-focused content for the advanced practice nursing core (advanced physiology and pathophysiology, health assessment, and pharmacology). She or he may work in collaboration with the program director/coordinator on the graduate nursing core (e.g., theory and research). This faculty member is responsible for the selection, evaluation, and counseling of students in the program and also participates in the ongoing evaluation of the program's resources and services.

Members of the program faculty must be prepared at the required graduate level and must maintain currency in clinical practice, licensure, and national certification as an NNP (AANP, 2013). These faculty members are responsible for development of the NNP role and clinical courses, and one of their primary responsibilities is the development, implementation, and evaluation of the NNP program curriculum. They also should participate in the selection, evaluation, and counseling of students and in the ongoing evaluation of the program's resources and services.

Individuals providing didactic instruction should be drawn from the interprofessional team of healthcare providers caring for infants and their families. Participants should be determined according to the resources available to the program but should generally include NNPs, neonatologists, pediatric subspecialists, APRNs, and allied health specialists. These faculty members should have the "preparation, knowledge, and skills appropriate to their content areas" (AANP, 2013). The didactic and clinical presentations of participating faculty will be tailored to the individual needs of the students under the direction of the NNP faculty.

V. Curriculum

The curriculum must be designed to provide experiences, both didactically and clinically, to meet the competencies as stated in the table on pages 19–39.

A. Didactic instruction

1. The curriculum must include three separate graduate-level core courses in the following areas:

a. advanced physiology and pathophysiology, including general principles that apply across the lifespan

b. advanced health assessment, including advanced assessment techniques, concepts, and approaches specific to the neonatal population

c. advanced pharmacology, including pharmacodynamics, pharmacokinetics, and pharmacotherapeutics of all broad categories of agents, including population-specific alterations in global concepts.

2. The curriculum must include a minimum of 200 didactic clock hours.

3. Specific neonatal content and/or courses related to advanced physiology and pathophysiology, advanced health assessment, and advanced pharmacology must be included and integrated throughout the other neonatal-specific didactic and clinical courses.

B. Clinical instruction

1. The clinical component of the NNP curriculum must include a minimum of 600 precepted clock hours with critically ill neonates or infants in the delivery room and in Level II, III, and IV NICUs.

2. Precepted clock hours with neonates with surgical or cardiovascular disease may occur in a pediatric ICU setting and may be included in the minimum 600 hours.

3. While clinical experience in pediatric ICU and Level II NICUs caring for critically ill newborns is valid, the majority of the 600 precepted clock hours must be spent in Level III and IV NICUs.

4. Hours of observational experience may *not* be included in the minimum 600 hours.

5. Clinical skills, or simulation laboratory hours and clinical seminar hours, may *not* be included in the minimum 600 hours.

6. **Sufficient clinical experiences, including simulation in the care of NICU graduate patients or long-term hospitalized infants must be included to provide competency in the primary care component of the NNP scope of practice. This is in addition to the 600 hours required in the care of acute/critically ill neonates.**

7. **While it may be difficult to require a set number of deliveries that must be attended or procedures that must be performed, attention to building competence in these areas through clinical or simulation experiences should be documented.**

C. **Core content**

1. **The curriculum must contain sufficient content to enable program graduates to meet the core competencies and neonatal population-specific competencies for NNP practice.**

2. **Recommended population-focused content for NNP education is outlined in this document.**

3. **Formal NNP curriculum evaluation should occur at regular intervals.**

4. **Postgraduate students must successfully complete graduate didactic and clinical requirements of an academic graduate NNP program through a formal graduate-level certificate or degree-granting-graduate-level NNP program. Postgraduate students are expected to master the same outcome criteria as graduate-degree-granting-program NNP students.**

Elaboration

The curriculum design of individual NNP programs is the prerogative of the program faculty. Although NANN supports the program faculty's exercise of creativity in designing the NNP curriculum, it is essential that the curriculum plan meet all current standards, evaluation criteria, and guidelines that have been iterated in this document. NNP faculty should have ongoing input into the development and revision of curriculum, progression, and graduation criteria. To ensure that students achieve successful program outcomes, program and course evaluation should be ongoing and conducted in real time with formal curriculum overview at least every 5 years.

Not all facilities care for neonates with cardiac disease or post-surgically in the NICU; some provide that care in the pediatric ICU (PICU). In this situation, precepted clinical hours caring for such neonates in the PICU may count toward the minimum 600 clinical hours.

Use of Simulation in NNP education. Consistent with the most recent addition of the NTF Criteria, the use of simulation as part of the NNP program curricula is encouraged, especially in relation to high-risk/low-frequency situations (NONPF, 2016). However, it must be emphasized that simulation experiences of any kind cannot be counted toward the required minimum number of clinical hours (600) in direct patient care for NNP students.

The intended role of simulation as of 2017 in graduate nursing education is to augment, not replace, direct patient care experiences. Examples of such experiences include laboratories for procedures/skills and demonstration of advanced health assessment competencies. These experiences may however, play a role in faculty evaluation of student performance, both formative and summative, which are very valuable, particularly in distance-learning programs where direct student observation by program faculty is limited.

Simulation can provide a creative space for faculty and students to enhance high-risk skills and procedures in a safe environment for both students and patients. Additionally, simulation scenarios can be developed in a uniquely advantageous fashion that both replicates the complex healthcare environments in which NNPs practice and provides opportunities for integration of APRN competency areas. For example, a simulation scenario ostensibly about "Patient Safety and Shift Sign-Out" can easily serve to evaluate student performance related to Scientific Foundation, Leadership, Quality, Healthcare Systems, etc. Through group simulations, students gain competence and confidence, and enhance their communication skills. Interdisciplinary scenarios also can be designed allowing students to work with other healthcare team members or students in healthcare programs such as pharmacy, physical therapy, and undergraduate nursing programs. (Faculty resources pertaining to simulation in nursing education are available via the National League for Nursing's Simulation Innovation Resource Center, http://sirc.nln.org/mod/glossary/view.php?id=183.)

Despite the inability to substitute hours in simulation lab with direct patient care hours, the NONPF recommends that advanced practice programs document their use of simulation as a teaching strategy and clearly articulate the ways in which simulation is used to augment clinical experiences. A sample form for this purpose is available in the NTF Criteria (2016) Appendix (www.nonpf.org/resource/resmgr/Docs/EvalCriteria2016Final.pdf).

Clinical and didactic content related to primary care of the high-risk infant during the first 2 years of life must be included in the curriculum. This content should be offered in addition to the clinical and didactic hours required in the care of the high-risk neonate. This content provides necessary preparation across the entire continuum of the NNP scope of practice. It also provides students with a more holistic perspective on practice while enhancing role diversity and career opportunities.

NPs expanding into the NNP population-focused area of practice may be allowed to challenge selected courses and experiences; however, didactic and clinical experiences must be sufficient to allow the student to master the competencies and meet the criteria for national certification as an NNP. NPs who have not practiced in the advanced practice role in an NICU must complete a minimum of 600 clinical hours.

NPs currently practicing in the NICU who are not nationally certified in the neonatal population focus must complete appropriate didactic coursework and a sufficient number of *direct patient care clinical hours* to establish/demonstrate competency. Programs must document credit granted for prior didactic and clinical experiences for individual students through a gap analysis. A gap analysis should be completed for certified NNPs originally educated in a certificate program who are completing a master's degree (www.nonpf.org/resource/resmgr/Docs/EvalCriteria2016Final.pdf).

VI. Preceptors and Clinical Sites

A. Preceptors

1. **Preceptors for the 600 clock hours in the ICU must have their master of science degree or doctoral degree in nursing (MS, MSN, or higher) and be nationally certified as an NNP. Preceptors also may be physicians who are board-certified in neonatology (or seeking board certification).**
    a. **NNP preceptors must have a minimum of 1 year full-time equivalent experience in the NP role, and have a minimum of 1-year full-time equivalent employment at the clinical site. These requirements ensure that the preceptor at a given site has both the clinical expertise and the familiarity with the site necessary to provide supervision of the NNP students.**

2. **The preceptor-to-student ratio should be such that individual learning and evaluation are optimized. Therefore, the preceptor-to-student ratio should not exceed 1:2.**

3. **Preceptors for other clinical experiences (e.g., in antenatal, intrapartum, and primary care) must possess the clinical expertise necessary to provide safe guidance and appropriate education for the NNP students.**

4. **Preceptors must be oriented to NNP program requirements and expectations for supervision and evaluation of the NNP students.**

5. **Preceptors must be evaluated annually for the purpose of ensuring the quality of the NNP students' learning experiences and defining preceptor relationships.**

Elaboration

Each student should be assigned a primary preceptor to coordinate the clinical experience. For the duration of the preceptorship, direct onsite supervision and consultation should be available from the NNP or neonatologist preceptor. The preceptor-to-student ratio should be such that individual learning is optimized. The recommended preceptor-to-student ratio may vary according to the extent of clinical responsibilities for a patient caseload. The optimal preceptor-to-student ratio differs if the preceptor also is seeing patients (1:1 if seeing own patients; 1:2 if not seeing own patients). The NNP faculty, however, has ultimate responsibility for the supervision and evaluation of students and for evaluation of the quality of the clinical learning environment (National Task Force on Quality Nurse Practitioner Education, 2016).

Responsibilities of Clinical Preceptors

1. Meet with the student prior to the preceptorship to discuss clinical objectives, schedules, and general guidelines. The preceptor should inform the student of any institutional orientation requirements. These should be completed prior to the beginning of the clinical experience.

2. Refer the student to any standardized procedures and management protocols applicable to unit management.

3. Assign an initial caseload of patients. Expansion of the caseload will depend on the evaluation of the student's readiness, knowledge, and skill level.

4. Permit the student to perform all the required management activities for assigned patients under appropriate supervision. These activities include, but are not limited to, the following:
   a. Participating in resuscitation and stabilization of neonates in the delivery room
   b. Admitting patients to the nursery, obtaining the perinatal and neonatal history, performing physical examinations, developing the differential diagnosis, and proposing the initial management plan
   c. Providing ongoing management of infants in collaboration with the preceptor and revising the management plan based on the evaluation of the infant's progress
   d. Performing diagnostic tests and procedures as dictated by the status and needs of the patient
   e. Responding to emergency situations to stabilize an infant
   f. Documenting the infant's clinical status, plan of care, and response to therapy in the medical record
   g. Evaluating the need for consultations and requesting them
   h. Facilitating an understanding of the infant's current and future healthcare needs and providing support to parents and staff
   i. Developing discharge plans
   j. Participating in post-discharge primary care management
   k. Participating in high-risk newborn transport if this service is available and if permitted by hospital and school protocol
   l. Providing staff development by participating in educational programs.

5. Provide direct supervision when the student is involved in patient care. The preceptor should be available on site for ongoing consultation and evaluation of the care delivered throughout the clinical experience.

6. Review the student's documentation and make constructive suggestions for improvement.

7. Meet with the student on an ongoing basis to discuss specific learning objectives and experiences. These meetings should focus on patient management and documentation, successful completion of procedures, comprehension of pathophysiology and management, interaction with staff and family, and role transition. Plans should be made for future learning experiences to meet the student's evolving learning needs. This information must be communicated to the NNP faculty in a timely manner throughout the clinical preceptorship.

8. Evaluate the student. The preceptor must communicate with the student and the faculty member or program director. This should include written evaluation(s) of the student's performance furnished at specified intervals and upon completion of the preceptorship.

9. Contact the program director or appropriate faculty member in a timely fashion with concerns or questions regarding the preceptor's ability to fulfill responsibilities or if there

are problems concerning the student's performance.

Responsibilities of Students

1. Discuss specific clinical objectives, schedules, and general guidelines with the preceptor and faculty prior to the clinical rotation.

2. Provide the clinical site with the necessary documentation regarding licensure, health data, liability insurance, and educational information (curriculum vitae or résumé).

3. Observe the policies of the clinical site.

4. Adhere to the standards and scope of professional practice.

5. Communicate with the preceptor and faculty on clinical progress and learning needs.

6. Demonstrate independent learning, diagnostic reasoning skills, and the use of available resources.

7. Maintain and submit a log of clinical skills and activities.

8. Complete self-evaluations and evaluations of preceptor and clinical site as required.

9. Successfully complete the American Academy of Pediatrics/American Heart Association Neonatal Resuscitation Program prior to beginning the clinical preceptorship.

B. Clinical sites

Clinical sites should be diverse and sufficient in number to ensure that core curriculum guidelines can be observed and clinical objectives can be accomplished.

1. Clinical sites should provide the student with the opportunity to manage a caseload of newborns and infants so they have the experiences necessary to achieve clinical competencies.

2. Clinical sites should provide the student with the opportunity to participate in educational activities, attend high-risk deliveries, and learn procedural skills.

3. Clinical sites should ensure that direct onsite supervision and consultation are available from the preceptor.

4. Clinical sites should be evaluated annually to ensure the quality of the NNP student's learning experiences.

5. **Faculty and student assessments of the clinical experience should be conducted regularly and documented.**

Elaboration

The NNP faculty or clinical coordinator is responsible for evaluating the ability of the potential clinical sites to provide an optimal clinical experience for the student. During the clinical preceptorship, the student has no legal status as a nurse practitioner and must be supervised by an APRN or a physician experienced in the care of high-risk infants.

NNP program faculty should provide oversight of the clinical learning environment, which may include, but is not limited to, physical and virtual site visits, e-mail, and phone consultations with the preceptor and agency administrators, as well as the student's appraisal of the clinical learning environment. A mechanism should be in place to ensure the clinical setting provides the opportunity to meet learning objectives and to document outcomes of the clinical experiences (National Task Force on Quality Nurse Practitioner Education, 2016).

Additional topics that may need to be addressed prior to the beginning of the clinical preceptorship include liability insurance coverage, workers' compensation benefits, contracts or agreements between universities and clinical sites, and the relationship between the preceptor and the university. These matters must be clarified because a wide variety of policies and practices exists. In the case of distance-learning programs, interstate and international policies may need elucidation.

Ideally, the clinical site would have established the NNP role description, advanced practice procedures, and management protocols before the student's clinical experience begins. However, this may not be possible if the preceptorship takes place in an NICU where there are no practicing NNPs. In this case the program director or faculty should be sure that this information is provided to the student in the didactic portion of the program.

Responsibilities of Program Faculty

1. Develop clinical and didactic portions of the NNP program, as outlined in the section on curriculum.

2. Provide the preceptor with the program objectives, outlines of didactic material, student's required reading list, and clinical course outline prior to the beginning of the clinical rotation.

3. Develop an evaluation process and the necessary forms to be used for formative and summative evaluation throughout and upon completion of the clinical preceptorship.

4. Consult with the student and preceptor to provide clarification of clinical objectives, activities, specific individual responsibilities, and requirements.

5. Ensure that clinical site visits are conducted as outlined in NTF guidelines.

6. Give approval of the student's clinical evaluation and competency throughout the program.

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Competencies

Competency Area	NP Core Competencies	Neonatal NP Competencies	Curriculum Content to Support Competencies *Neither required nor comprehensive, this list reflects only suggested content specific to the population*
Scientific Foundation Competencies	1. Critically analyzes data and evidence for improving advanced nursing practice. 2. Integrates knowledge from the humanities and sciences within the context of nursing science. 3. Translates research and other forms of knowledge to improve practice processes and outcomes. 4. Develops new practice approaches based on the integration of research, theory, and practice knowledge.		**Advanced Neonatal Pathophysiology** **Advanced Neonatal Pharmacology** **Advanced Neonatal Assessment** **Research and Quality Improvement** A. Research process and methods B. Information databases C. Critical evaluation of research findings D. Translational research E. Research on vulnerable populations F. Funding for research G. Research dissemination H. Institutional review boards I. Safety J. Continuous Quality Improvement **Professional Role** A. Nursing theories B. Evidence-based practice
Leadership Competencies	1. Assumes complex and advanced leadership roles to initiate and guide change. 2. Provides leadership to foster collaboration with multiple stakeholders (e.g., patients, community, integrated healthcare teams, and policy makers) to improve health care.	Interprets the role of the NNP to the infant's family, other healthcare professionals, and the community.	**Professional Role** A. Professional leadership B. Professional accountability/ethical standards of practice C. Evidence-based practice D. Role theory E. Advanced practice role F. Role of the NNP G. Scope of practice for the NNP H. Standards of practice I. Professional regulation and licensure J. Credentialing and certification

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	3. Demonstrates leadership that uses critical and reflective thinking. 4. Advocates for improved access, quality, and cost effective health care. 5. Advances practice through the development and implementation of innovations incorporating principles of change. 6. Communicates practice knowledge effectively both orally and in writing. 7. Participates in professional organizations and activities that influence advanced practice nursing and/or health outcomes of a population focus.		K. Clinical decision making and problem solving L. Professional scholarship **Teaching and Education** A. Theories—motivational, change, education, communication B. Program planning and evaluation C. Instructional technology D. Cultural sensitivity E. Communication F. Collaboration G. Conflict resolution H. Assertiveness I. Collaborative practice models J. Informatics K. Consultation
Quality Competencies	1. Uses best available evidence to continuously improve quality of clinical practice. 2. Evaluates the relationships among access, cost, quality, and safety and their influence on health care. 3. Evaluates how		**Healthcare Policy and Advocacy** A. Economics of health care **Research and Quality Improvement** A. Information databases B. Critical evaluation of research findings C. Translational research D. Research dissemination

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	organizational structure, care processes, financing, marketing, and policy decisions impact the quality of health care. 4. Applies skills in peer review to promote a culture of excellence. 5. Anticipates variations in practice and is proactive in implementing interventions to ensure quality.		E. Institutional review boards F. Safety G. Continuous quality improvement H. Finance and value-added care
Practice Inquiry Competencies	1. Provides leadership in the translation of new knowledge into practice. 2. Generates knowledge from clinical practice to improve practice and patient outcomes. 3. Applies clinical investigative skills to improve health outcomes.		A. Research process and methods B. Information databases C. Critical evaluation of research findings D. Translational research E. Research on vulnerable populations F. Research dissemination G. Institutional review boards H. Safety I. Continuous Quality Improvement
Technology and Information Literacy Competencies	1. Integrates appropriate technologies for knowledge management to improve health care. 2. Translates technical and	Determines the health literacy needs of infant's family in planning care	**Communication** A. Communication theory B. Collaboration C. Conflict resolution

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	scientific health information appropriate for various users' needs. 2a. Assesses the patient's and caregiver's educational needs to provide effective, personalized health care. 2b. Coaches the patient and caregiver for positive behavioral change. 3. Demonstrates information literacy skills in complex decision making. 4. Contributes to the design of clinical information systems that promote safe, quality, and cost-effective care. 5. Uses technology systems that capture data on variables for the evaluation of nursing care.		D. Assertiveness E. Collaborative practice models F. Informatics G. Information data bases/technology H. Consultation I. Health literacy **Professional Role** A. Information technology B. Professional boundaries **Teaching and Education** A. Theories—motivational, change, education, communication B. Program planning and evaluation C. Instructional technology D. Cultural sensitivity
Policy Competencies	1. Demonstrates an understanding of the interdependence of policy and practice. 2. Advocates for ethical		**Healthcare Policy and Advocacy** A. Process of healthcare legislation/administrative policy B. Maternal and child health legislation C. Implications of healthcare policy D. Economics of health care

Competency Area	NP Core Competencies	Neonatal NP Competencies	Curriculum Content to Support Competencies *Neither required nor comprehensive, this list reflects only suggested content specific to the population*
	policies that promote access, equity, quality, and cost. 3. Analyzes ethical, legal, and social factors influencing policy development. 4. Contributes to the development of health policy. 5. Analyzes the implications of health policy across disciplines. 6. Evaluates the impact of globalization on healthcare policy development.		E. Healthcare financing F. Legislation and regulations concerning advanced practice G. Advocacy **Ethical and Legal Issues** A. Ethical decision making B. Ethical issues—reproductive, prenatal, neonatal, and infancy C. Ethical use of information D. Patient advocacy E. Resource allocation F. Legal issues affecting patient care and professional practice G. Cultural sensitivity **Global Health Care** **Communication** A. Communication theory B. Collaboration C. Conflict resolution D. Assertiveness E. Collaborative practice models F. Informatics G. Consultation
Health Delivery System Competencies	1. Applies knowledge of organizational practices and complex systems to	1. Advocates for quality patient care. 2. Assists families in dealing with system complexities.	**Management and Organization** A. Organizational theory B. Principles of management C. Models of planned change

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	improve healthcare delivery. 2. Effects health care change using broad-based skills, including negotiating, consensus-building, and partnering. 3. Minimizes risk to patients and providers at the individual and systems level. 4. Facilitates the development of healthcare systems that address the needs of culturally diverse populations, providers, and other stakeholders. 5. Evaluates the impact of healthcare delivery on patients, providers, other stakeholders, and the environment. 6. Analyzes organizational structure, functions, and resources to improve the delivery of care. 7. Collaborates in planning for transitions across the continuum of care.		D. Collaborative practice E. Healthcare system financing F. Billing and coding for reimbursement G. Standards of practice H. Cost, quality, and outcome measures I. Resource management J. Evaluation models K. Peer review **Communication** A. Communication theory B. Collaboration C. Conflict resolution D. Assertiveness E. Collaborative practice models F. Informatics G. Consultation **Healthcare Policy and Advocacy** A. Process of healthcare legislation B. Maternal and child health legislation C. Implications of healthcare policy D. Economics of health care E. Third-party reimbursement F. Legislation and regulations concerning advanced practice G. Advocacy

Competency Area	NP Core Competencies	Neonatal NP Competencies	Curriculum Content to Support Competencies *Neither required nor comprehensive, this list reflects only suggested content specific to the population*
			Research and Quality Improvement A. Safety B. Continuous Quality Improvement
Ethics Competencies	1. Integrates ethical principles in decision making. 2. Evaluates the ethical consequences of decisions. 3. Applies ethically sound solutions to complex issues related to individuals, populations and systems of care.	Conforms to the *Code of Ethics of the National Association of Neonatal Nurses.*	**Ethical and Legal Issues** A. Ethical decision making B. Ethical issues—reproductive, prenatal, neonatal, and infancy C. Ethical use of information D. Patient advocacy E. Bioethics committees F. Clinical research G. Resource allocation H. Genetic counseling I. Legal issues affecting patient care and professional practice J. Informed consent K. Cultural sensitivity L. Palliative care M. End-of-life care
Independent Practice Competencies	1. Functions as a licensed independent practitioner. 2. Demonstrates the highest level of accountability for professional practice. 3. Practices independently managing previously diagnosed and undiagnosed patients. 3a. Provides the full	1. Obtains a thorough health history to include maternal medical, antepartum, intrapartum, newborn, and interim history. 2. Performs a complete, systems-focused examination to include physical, behavioral, and developmental	**Advanced Neonatal Pathophysiology** **Advanced Neonatal Pharmacology** **Advanced Neonatal Assessment** **Perinatal Issues** A. Perinatal physiology 1. Maternal physiology (physiologic adaptation to pregnancy, pathologic changes or disease in pregnancy, effects of pre-existing disease) 2. Fetal physiology

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	spectrum of healthcare services to include health promotion, disease prevention, health protection, anticipatory guidance, counseling, disease management, and palliative and end-of-life care. 3b. Uses advanced health assessment skills to differentiate between normal, variations of normal and abnormal findings. 3c. Employs screening and diagnostic strategies in the development of diagnoses. 3d. Prescribes medications within scope of practice. 3e. Manages the health/illness status of patients and families over time. 4. Provides patient-centered	assessments. 3. Develops a comprehensive database that includes pertinent history, diagnostic tests, and physical and developmental assessment. 4. Demonstrates critical thinking and diagnostic reasoning skills in clinical decision making. 5. Establishes priorities of care. 6. Initiates therapeutic interventions according to established standards of care. 7. Demonstrates competency in the technical skills considered essential for NNP practice according to the standards set forth by national, professional organizations. 8. Intervenes according to established standards of care to resuscitate and stabilize compromised newborns and infants. 9. Implements developmentally appropriate care.	3. Transitional changes 4. Neonatal physiology 5. Immune and nonimmune hydrops B. Pharmacology 1. Principles of pharmacology and pharmacotherapeutics, including those at the cellular response level 2. Principles of pharmacokinetics and pharmacodynamics of broad categories of drugs 3. Common categories of drugs used in the newborn and infant 4. Monitoring of drug therapies including drug levels when appropriate 5. Effects of drugs during pregnancy and lactation C. Genetics 1. Molecular genetic testing 2. Genetic screening 3. Specific chromosomal defects and management 4. Human genome project 5. Gene mapping and personalized care 6. Genetic counseling **General Assessment** A. Perinatal history B. Antepartum conditions C. Prenatal diagnostic testing D. Intrapartum conditions E. Influence of NICU environment on the newborn and infant F. Gestational age assessment G. Physical assessment H. Behavioral assessment

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	care recognizing cultural diversity and the patient or designee as a full partner in decision making. 4a. Works to establish a relationship with the patient characterized by mutual respect, empathy, and collaboration. 4b. Creates a climate of patient-centered care to include confidentiality, privacy, comfort, emotional support, mutual trust, and respect. 4c. Incorporates the patient's cultural and spiritual preferences, values, and beliefs into health care. 4d. Preserves the patient's control over decision making by negotiating a mutually acceptable plan of care.	10. Ensures that principles of pain management are applied to all aspects of neonatal and infant care. 11. Documents assessment, plan, interventions, and outcomes of care. 12. Considers community and family resources and strengths, when planning patient care and follow up needs across the continuum of care. 13. Communicates with family members and caregivers regarding the newborn and infant's healthcare status and needs. 14. Applies principles of crisis management to assist family members in coping with their infant's illness. 15. Participates in the learning needs of students and other healthcare professionals. 16. Participates as a member of an interdisciplinary team through the development of collaborative and innovative practices. 17. Identifies strategies to	I. Developmental assessment J. Growth and nutritional assessment K. Immunization assessment L. Pain assessment and evidence-based tools across the population (up through 2 years) M. Assessment of family adaptation, coping skills, and resources **Sociocultural Assessment** A. Family assessment 1. Family function a. Roles b. Interactions c. Effect of childbearing 2. Social, cultural, and spiritual variations 3. Support systems B. Families in crisis 1. Crisis theory 2. Principles of intervention 3. Crises of childbearing a. Sick or premature infant b. Chronically ill or malformed infant c. Death of an infant 4. Grief a. Stages b. Factors influencing grieving process c. Pathologic grief d. Sibling reactions C. Principles of family-centered care **Clinical and Diagnostic Laboratory Assessments** A. Clinical laboratory tests 1. Microbiologic

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		deliver culturally sensitive, high-quality care free of personal biases. 18. Applies principles of neonatal pharmacotherapeutics to clinical practice.	4. Serologic 5. Metabolic and endocrine 6. Immunologic 7. Routine newborn screening 8. Other B. Diagnostic tests (types and techniques) 1. Ultrasound 2. Computed tomography (CT) 3. Magnetic resonance imaging (MRI), magnetic resonance angiogram (MRA), magnetic resonance spectroscopy (MRS) 4. X ray 5. Fluoroscopy 6. Electrocardiogram (EKG) 7. Electroencephalogram (EEG) 8. Echocardiogram (ECHO) 9. Cardiac catheterization C. Selection of diagnostic tests 1. Indications 2. Reliability 3. Advantages and disadvantages 4. Cost-effectiveness 5. Interpretation of results D. Performance of procedures for neonates and infants, including but not limited to: 1. Lumbar puncture 2. Umbilical vessel catheterization 3. Percutaneous arterial and venous catheters 4. Arterial puncture 5. Venipuncture 6. Capillary heel-stick blood sampling 7. Suprapubic bladder aspiration

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			8. Bladder catheterization 9. Endotracheal intubation 10. Laryngeal airway placement 11. Intraosseous 12. Needle aspiration of pneumothorax 13. Chest-tube insertion and removal 14. Exchange transfusion 15. Replacement of g-tube There may be procedures not covered in an NNP program but that *are* part of the NNP scope of practice that the NNP graduate would be allowed to perform if credentialed by the facility. These may include: A. Circumcision B. Pericardial tap C. Ventricular tap D. Superficial suturing E. Removal of skin tags or extra digits by suture ligation **General Management (across the population, from neonate through age 2)** A. Thermoregulation 1. Factors affecting heat loss and production 2. Mechanisms of heat loss and gain B. Resuscitation and stabilization 1. Assessment of risk factors 2. Physiology of asphyxia 3. Indications for intubation, ventilation, and cardiac compressions (see also section on neonatal procedures) 4. Resuscitation equipment 5. Pharmacotherapeutics 6. Stabilization

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			7. Neonatal transport 8. Neonatal Resuscitation Program (NRP) provider 9. Therapeutic hypothermia C. Pain management 1. Physiology of pain 2. Pain management a. Nonpharmacologic b. Pharmacologic D. Palliative and end-of-life care 1. Ethical considerations 2. Pain management at end of life 3. Hospice care 4. Bereavement **Clinical Management** A. Cardiovascular system 1. Embryology 2. Physiology/pathophysiology 3. Fetal, transitional, neonatal circulation 4. Rhythm disturbances/EKG interpretation 5. Myocardial dysfunction 6. Shock, hypotension, hypertension 7. Congenital heart disease (pathophysiology, clinical presentation, differential diagnosis, medical management, pre- and postoperative management) 8. Cardiovascular radiology and echocardiogram interpretation 9. Pharmacotherapeutics B. Pulmonary system 1. Embryology and pulmonary development after birth 2. Physiology (oxygenation and ventilation, gas exchange, acid-base balance)

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			3. Pathophysiology 4. Asphyxia 5. Pulmonary diseases (pathophysiology, etiology, clinical presentation, differential diagnosis, treatment) 6. Pulmonary radiology 7. Respiratory therapy a. Physiologic principles b. Physiologic monitoring c. Continuous positive airway pressure (CPAP) d. Ventilation strategies e. Extracorporeal membrane oxygenation (ECMO) 8. Pharmacotherapeutics C. Gastrointestinal (GI) system 1. Embryology 2. Anatomy and physiology of the GI tract a. Structure and function b. Hormonal influence c. Motility d. Digestion and absorption 3. Pathophysiology 4. Digestive and absorptive disorders a. Disorders of sucking and swallowing b. Motility c. Gastroesophageal (GE) reflux d. Malabsorption e. Diarrhea f. Short gut 5. Anomalies and obstruction 6. Necrotizing enterocolitis 7. Spontaneous intestinal perforation

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			D. Nutrition 1. Effects of maturational changes on management of nutritional requirements and feeding 2. Caloric and nutritional requirements and calculations 3. Feeding methods a. Breast b. Bottle c. Gavage d. Gastrostomy e. Transpyloric f. Trophic 4. Human milk versus formula a. Composition b. Benefits c. Preterm infants d. Human milk fortifier e. Donor human milk and exclusive human milk diets 5. Parenteral nutrition a. Composition b. Indications c. Benefits d. Complications e. Monitoring 6. Dietary supplementation for term and preterm infants 7. Dietary adjustments in special circumstances a. Cholestasis b. Short gut syndrome c. Osteopenia d. Inborn errors of metabolism e. Vitamin deficiencies and associated features, signs and symptoms f. Congenital heart disease

Competency Area	NP Core Competencies	Neonatal NP Competencies	Curriculum Content to Support Competencies *Neither required nor comprehensive, this list reflects only suggested content specific to the population*
			g. Chronic lung disease E. Renal and genitourinary 1. Embryology and anatomy 2. Renal physiology 3. Pathophysiology 4. Evaluation of renal function 5. Urinary tract infections 6. Congenital anomalies 7. Functional abnormalities of the renal system 8. Renal failure a. Predisposing factors and etiologies b. Pathophysiology c. Management • Fluid and electrolytes • Nutritional modification • Drug modification • Hemofiltration • Dialysis • Transplant • Pharmacotherapeutics F. Fluid and electrolytes 1. Physiology a. Electrolyte homeostasis b. Body composition in fetal and neonatal periods c. Transitional changes d. Insensible water loss e. Endocrine control, mineralocorticoids, antidiuretic hormone (ADH), calcitonin/parathyroid hormone (PTH) f. Renal function/physiology

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			2. Pathophysiology 3. Principles of fluid therapy a. Assessment of hydration b. Maintenance requirements c. Factors affecting total fluid requirements 4. Disorders of fluids and electrolytes 5. Vomiting and dehydration G. Endocrine and metabolic system 1. Neuroendocrine regulation 2. Carbohydrate/fat/protein metabolism a. Inborn errors 3. Infant of a diabetic mother 4. Pathophysiology 5. Hypothalamic-Pituitary axis function and disorders a. Adrenal gland (embryology, pathways, and tests) b. Thyroid (embryology, pathways and tests, management) c. Calcium and phosphorus homeostasis d. Inborn errors of metabolism e. Newborn screening f. Ambiguous genitalia, intersex disorders g. Pharmacotherapeutics H. Hematologic system and malignancies 1. Development of the hematopoietic system 2. Physiology/pathophysiology 3. Anemia 4. Polycythemia and hyperviscosity 5. Bilirubin a. Physiology of bilirubin production, metabolism, and excretion b. Hyperbilirubinemia c. Breast milk jaundice d. Encephalopathy

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			6. Hepatic disorders 7. Coagulation and platelets 8. Disorders of coagulation and platelets I. Immunologic system 1. Development of the immune system 2. Function of the immune system 3. Allo- and auto-immune disorders 4. Pharmacotherapeutics J. Infectious diseases 1. Physiology/Pathophysiology 2. Evaluation of the infant a. History b. Physical examination c. Laboratory data d. Other diagnostic tests 3. Treatment a. Antimicrobial b. Adjunctive therapy c. Immunizations d. Biologic therapies 4. Infection with specific microorganisms 5. Maternal infections 6. Systemic Inflammatory Response System (SIRS) 7. Pharmacotherapeutics K. Musculoskeletal system 1. Embryology 2. Congenital abnormalities 3. Birth injuries 4. Metabolic bone disease L. Neurobehavioral system 1. Development of the nervous system a. Embryology b. Anatomy c. Cerebral circulation

Competency Area	NP Core Competencies	Neonatal NP Competencies	Curriculum Content to Support Competencies *Neither required nor comprehensive, this list reflects only suggested content specific to the population*
			d. Maturation 2. Birth injuries 3. Anomalies and defects of central nervous system (CNS) and spine • Malformations • Ischemic brain injury • Seizures • Intracranial hemorrhage • Periventricular leukomalacia 4. Disorders of movement and tone 5. Growth and development 6. Developmentally supportive care 7. Pharmacotherapeutics M. Eyes, ears, nose, and throat 1. Embryology and anatomy 2. Physiology/pathophysiology 3. Craniofacial malformations 4. Abnormalities of the airway a. Congenital b. Acquired 5. Auditory system a. Physiology of hearing and speech b. Speech and language alterations c. Hearing screening methods d. Abnormalities 6. Visual system a. Physiology of vision and visual development b. Visual acuity c. Visual screening d. Abnormalities e. Retinopathy of prematurity (ROP) f. Associated syndromes 7. Pharmacotherapeutics

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			N. Integumentary system 1. Embryology 2. Anatomy and physiology 3. Pathophysiology 4. Terminology 5. Common variations 6. Skin disorders 7. Hair and nail disorders 8. Nutrient deficiencies and skin manifestations 9. Pharmacotherapeutics O. Intrauterine drug exposure 1. Screening for maternal substance use 2. Assessment of drug withdrawal 3. Laboratory tests 4. Ethical considerations 5. Physiologic effects 6. Clinical management of neonatal abstinence syndrome a. Pharmacologic b. Nonpharmacologic c. Feedings 7. Social Consideration **Health Promotion and Disease Prevention** A. Discharge planning www.babystepstohome.com 1. Discharge planning process 2. Technologically dependent infants 3. Parent education a. infant cue recognition b. emergency measures c. medical equipment d. disease-specific instructions

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			e. well-child care (normal growth and development, nutrition, dental health, immunizations) 4. Community resources 5. Home care and follow-up B. Primary care for infants through age 2 1. Physical assessment 2. Immunizations 3. Hearing screening 4. Eye exams/strabismus 5. Neurologic follow-up 6. Developmental screening 7. Safety issues 8. Chronic disorders of the high-risk infant 9. Common pediatric primary care disorders (under age 2) • Upper respiratory infection management • Croup • Bronchiolitis • Pertussis • Otitis Media • Herpangina/thrush • Hand-foot-mouth disease (enterovirus) • Vomiting and dehydration • Nutrition and growth • Failure to thrive • Head growth • Micro- and macrocephaly • Gastro-esophageal reflux • Hip dysplasia • Urinary tract infection • Dermatologic disorders