

American Board of Psychiatry and Neurology Neurodevelopmental Disabilities Core Competencies Outline

I. Neurodevelopmental Disabilities Patient Care and Procedural Skills Core Competencies

A. General: Neurodevelopmentalists shall demonstrate the following abilities:

1. To perform and document a relevant history and examination on culturally diverse patients¹ to include as appropriate:
 - a. Chief complaint
 - b. History of present illness
 - c. Medical history
 - d. A comprehensive review of systems
 - e. A biological family history
 - f. A sociocultural history²
 - g. A neurodevelopmental history and assessment
 - h. A situationally germane general and neurologic examination
2. To construct appropriate differential diagnoses
3. To evaluate, assess and recommend effective management of patients
4. To develop skills to interact with community services for care of patients

B. For Neurology: Based on a comprehensive developmental assessment, neurodevelopmentalists shall demonstrate the following abilities:

1. To determine:
 - a. If a patient's symptoms are the result of a disease affecting the central and/or peripheral nervous system or are of another origin (e.g., of a systemic, psychiatric, or psychogenic illness)
 - b. A formulation, differential diagnosis, laboratory investigation, and management plan
2. To develop and maintain the technical skills to:
 - a. Perform lumbar puncture, skin biopsy, edrophonium, and caloric testing, programming of vagal nerve stimulator
 - b. Identify and describe abnormalities seen in common neurologic disorders on radiographic testing, including plain films, myelography, angiography, computerized tomography (CT), isotope, and magnetic resonance imaging/magnetic resonance angiography
 - c. Evaluate the application and relevance of investigative procedures and interpretation in the diagnosis of neurologic disease, including the following:

- (1) Standardized infant and toddler testing (Bayley, Dubowitz)
 - (2) Neuropsychological and educational achievement testing
 - (3) Speech and language testing
 - (4) Standardized testing of sensory and motor function (physical and occupational therapy [PT/OT])
 - (5) Audiometry
 - (6) Electroencephalography (EEG)
 - (7) Nerve conduction studies and electromyography (NCS/EMG)
 - (8) Evoked potentials
 - (9) Polysomnography
 - (10) Autonomic function testing
 - (11) Cerebrospinal fluid (CSF) analysis
- d. Identify and describe gross and microscopic specimens taken from the normal nervous system and from patients with major neurologic disorders
3. To recognize and treat neurodevelopmental disorders

II. Neurodevelopmental Disabilities Medical Knowledge Core Competencies

- A. General: Neurodevelopmentalists shall demonstrate the following:
 1. Knowledge of major developmental and behavioral disorders, including considerations relating to age, gender, race, and ethnicity, based on the literature and standards of practice. This knowledge shall include:
 - a. The epidemiology of the disorder
 - b. The etiology of the disorder, including medical, genetic, and sociocultural factors
 - c. The phenomenology of the disorder
 - d. An understanding of the impact of physical illness on the patient's functioning
 - e. The experience, meaning, and explanation of the illness for the patient and family, including the influence of cultural factors and culture-bound syndromes
 - f. Effective treatment strategies
 - g. Course and prognosis
 2. Knowledge of health care delivery systems, and patient and family counseling
 3. Knowledge of the application of ethical principles in delivering medical care
 4. Ability to reference and utilize electronic systems to access medical, scientific, and patient information

- B. For Neurology: Neurodevelopmentalists shall demonstrate knowledge of the following:
1. Basic neuroscience that is critical to the practice of neurology and neurodevelopmental disabilities (NDD)
 2. Pathophysiology of major psychiatric and neurologic disorders and familiarity with the scientific basis of neuropsychology, neurology, and NDD, including:
 - a. Neuroanatomy
 - b. Neuropathology
 - c. Neurochemistry
 - d. Neurophysiology
 - e. Neuropharmacology
 - f. Neuroimmunology/neurovirology
 - g. Neurogenetics/molecular neurology and neuroepidemiology
 - h. Neuroendocrinology
 - i. Neuroimaging
 - j. Neuro-ophthalmology
 - k. Neuro-otology
 - l. Neurologic development across the lifespan, including NDD
 - m. Interventional neurology (basic principles only)
 3. Neurologic disorders and NDD across the lifespan, including treatment for the following:
 - a. Static and progressive cognitive disorders, including mental retardation and childhood dementia
 - b. Neurodevelopmental and neurogenetic disorders, including congenital malformations
 - c. Epilepsy and related disorders
 - d. Neuromuscular disorders and cerebral palsy
 - e. Demyelinating and dysmyelinating disorders of the central nervous system
 - f. Cerebrovascular disorders
 - g. Infectious diseases of the nervous system
 - h. Neoplastic disorders and tumors of the nervous system
 - i. Nervous system trauma
 - j. Toxic and metabolic disorders of the nervous system
 - k. Acute, chronic pain, including headache
 - l. Sleep disorders
 - m. Adverse effect of drugs on the nervous system
 - n. Critical care and emergency neurology
 - o. Coma and brain death
 - p. Headache and facial pain
 - q. Movement disorders, including abnormalities caused by drugs
 4. Neurodevelopmentalists shall demonstrate knowledge of

psychiatry, including the following:

- a. Psychopathology, epidemiology, diagnostic criteria, and clinical course for common psychiatric disorders
- b. Drug dependence and substance abuse
 - (1) Phenomena of withdrawal, tolerance, etc.
 - (2) Therapy (medication and psychological issues)
 - (3) Supportive services generally available (e.g., Alcoholics Anonymous)
 - (4) Neurologic adverse effects of alcohol and substance abuse
- c. Interplay between psychogenic and neurologic clinical manifestations, including somatization and conversion
- d. Psychopharmacology
 - (1) Major drugs (e.g., antipsychotics, antidepressants, antianxiety agents, mood stabilizers)
 - (2) Adverse effects (e.g., acute, motor, neuroleptic malignant syndrome)
 - (3) Iatrogenic disorders in psychiatry and neurology, changes in mental status, and movement disorders
 - (4) Nonpharmacologic treatments and management

C. For Neurodevelopmental Disabilities:

1. Neurodevelopmental theory
 - a. Cognitive, including developmental theory
 - b. Motor
 - c. Behavior
 - d. Language/communication
 - e. Conceptual models of development (e.g., Cattell, Piaget, neuropsychology)
 - f. Psychometrics
 - g. Normal brain development
2. Neurogenetics
 - a. Chromosomal abnormalities
 - (1) Single gene disorders
 - (2) Deletions
 - (3) Rearrangements
 - b. Metabolic/degenerative abnormalities
 - c. Dysmorphology, including fetal exposure (i.e., teratology)
 - d. Genetic counseling
3. Cognitive disorders (intellectual disability)
 - a. Diagnostic criteria, including diagnostic testing
 - b. Etiology/epidemiology
 - c. Natural history

- d. Correlation with functional status, associated deficits
- e. Treatment
 - (1) Pharmacotherapy
 - (2) Medical/surgical therapy
 - (3) Rehabilitation, including PT/OT, speech therapy, education, behavioral therapy
- f. Prevention
- 4. Cognitive disorders (learning disabilities)
 - a. Diagnostic criteria, including diagnostic testing
 - b. Etiology/epidemiology
 - c. Natural history
 - d. Correlation with functional status, associated deficits
 - e. Treatment
 - (1) Pharmacotherapy
 - (2) Medical/surgical therapy
 - (3) Rehabilitation, including PT/OT, speech therapy, education, behavioral therapy
 - f. Prevention
- 5. Communication disorders (e.g., autism spectrum disorder, developmental language disorders)
 - a. Diagnostic criteria, including diagnostic testing
 - b. Etiology/epidemiology
 - c. Natural history
 - d. Correlation with functional status, associated deficits
 - e. Treatment
 - (1) Pharmacotherapy
 - (2) Medical/surgical therapy
 - (3) Rehabilitation, including PT/OT, speech therapy, education, behavioral therapy
 - f. Prevention
- 6. Neurobehavioral disorders (e.g., attention-deficit/hyperactivity disorder [ADHD]), obsessive-compulsive disorder, oppositional defiant disorder, childhood disintegrative disorder, Tourette disorder)
 - a. Diagnostic criteria, including diagnostic testing
 - b. Etiology/epidemiology
 - c. Natural history
 - d. Correlation with functional status, associated deficits
 - e. Treatment
 - (1) Pharmacotherapy
 - (2) Medical/surgical therapy
 - (3) Rehabilitation, including PT/OT, speech therapy, education, behavioral therapy
 - f. Prevention

7. Motor disabilities (e.g., static and progressive encephalopathies, cerebral palsy, neuromuscular disorders, minor neuromotor dysfunction)
 - a. Diagnostic criteria, including diagnostic testing
 - b. Etiology/epidemiology
 - c. Natural history
 - d. Correlation with functional status, associated deficits
 - e. Treatment
 - (1) Pharmacotherapy
 - (2) Medical/surgical therapy
 - (3) Rehabilitation, including PT/OT, speech therapy, education, behavioral therapy
 - f. Prevention
8. Visual and auditory impairments
 - a. Diagnostic criteria, including diagnostic testing
 - b. Etiology/epidemiology
 - c. Natural history
 - d. Correlation with functional status, associated deficits
 - e. Treatment
 - (1) Pharmacotherapy
 - (2) Medical/surgical therapy
 - (3) Rehabilitation, including PT/OT, speech therapy, education, behavioral therapy
 - f. Prevention
9. Neurodevelopmental disorders associated with major medical conditions (e.g., spina bifida, severely and profoundly disabled, low birth weight infants, multiple congenital anomalies)
 - a. Diagnostic criteria, including diagnostic testing
 - b. Etiology/epidemiology
 - c. Natural history
 - d. Correlation with functional status, associated deficits
 - e. Treatment
 - (1) Pharmacotherapy
 - (2) Medical/surgical therapy
 - (3) Rehabilitation, including PT/OT, speech therapy, education, behavioral therapy
 - f. Prevention
10. Rehabilitation (e.g., traumatic brain and spinal cord injuries, near drowning)
 - a. Diagnostic criteria, including diagnostic testing
 - b. Etiology/epidemiology
 - c. Natural history
 - d. Correlation with functional status, associated deficits

- e. Treatment
 - (1) Pharmacotherapy
 - (2) Medical/surgical therapy
 - (3) Rehabilitation, including PT/OT, speech therapy, education, behavioral therapy
- f. Prevention
- 11. Counseling, advocacy, and ethics, including research ethics
 - a. Persistent vegetative states/brain death
 - b. Legislative issues (e.g., ADA)
 - c. Community resources
 - d. Family-centered approaches to NDD patients

III. Neurodevelopmental Disabilities Interpersonal and Communications Skills Core Competencies

- A. Neurodevelopmentalists shall demonstrate the following abilities:
 - 1. To listen to and understand patients and to attend to nonverbal communication
 - 2. To communicate effectively with patients using verbal, nonverbal, and written skills as appropriate
 - 3. To develop and maintain a therapeutic alliance with patients by instilling feelings of trust, honesty, openness, rapport, and comfort in their relationships with neurodevelopmentalists
 - 4. To partner with patients to develop an agreed-upon health care management plan
 - 5. To transmit information to patients in a clear and meaningful fashion
 - 6. To understand the impact of the neurodevelopmentalist's own feelings and behavior so that these do not interfere with appropriate treatment
 - 7. To communicate effectively and work collaboratively with allied health care professionals and with other professionals involved in the lives of patients and families
 - 8. To educate patients, their families, and professionals about medical, psychosocial, and behavioral issues
- B. Neurodevelopmentalists shall demonstrate the ability to obtain, interpret, and evaluate consultations from other medical specialties. This shall include:
 - 1. Knowing when to solicit consultation and having the sensitivity to assess the need for consultation
 - 2. Formulating and clearly communicating the consultation question
 - 3. Discussing the consultation findings with the consultant
 - 4. Discussing the consultation findings with the patient and family
- C. Neurodevelopmentalists shall serve as an effective consultant to other

medical specialists, mental health professionals, and community agencies by demonstrating the abilities to:

1. Communicate effectively with the requesting party to refine the consultation question
2. Maintain the role of consultant
3. Communicate clear and specific recommendations
4. Respect the knowledge and expertise of the requesting professionals

D. Neurodevelopmentalists shall demonstrate the ability to communicate effectively with patients and their families by:

1. Gearing all communication to the educational and intellectual levels of patients and their families
2. Demonstrating sociocultural sensitivity to patients and their families
3. Providing explanations of psychiatric and neurologic disorders and treatment that are jargon-free and geared to the educational/intellectual levels of patients and their families
4. Providing preventive education that is understandable and practical
5. Respecting the patients' cultural, ethnic, religious, and economic backgrounds
6. Developing and enhancing rapport and a working alliance with patients and their families
7. Ensuring that the patient and/or family have understood the communication
8. Responding promptly to electronic communications when used as a communication method agreed upon by neurodevelopmentalists and their patients and patients' families

E. Neurodevelopmentalists shall maintain up-to-date medical records and write legible prescriptions. These records must capture essential information while simultaneously respecting patient privacy, and they must be useful to health professionals outside psychiatry and neurology.

F. Neurodevelopmentalists shall demonstrate the ability to effectively lead a multidisciplinary treatment team, including being able to:

1. Listen effectively
2. Elicit needed information from team members
3. Integrate information from different disciplines
4. Manage conflict
5. Clearly communicate an integrated treatment plan

G. Neurodevelopmentalists shall respect confidentiality and sensitivity with their patients and families by communicating effectively. Such communication may include:

1. Use of informed consent when considering investigative procedures

2. Genetic counseling and palliative care with appropriate consideration and compassion for the patient in providing accurate medical information and prognosis
3. The risks and benefits of the proposed treatment plan, including possible side effects of medications and/or complications of nonpharmacologic treatments
4. Alternatives (if any) to the proposed treatment plan
5. Appropriate education concerning the disorder, its prognosis, and prevention strategies

IV. Neurodevelopmental Disabilities Practice-Based Learning and Improvement Core Competencies

- A. Neurodevelopmentalists shall recognize limitations in their own knowledge base and clinical skills and understand and address the need for lifelong learning.
- B. Neurodevelopmentalists shall demonstrate appropriate skills for obtaining and evaluating up-to-date information from scientific and practice literature and other sources to assist in the quality care of patients. This shall include, but not be limited to:
 1. Use of medical libraries
 2. Use of information technology, including Internet-based searches and literature databases
 3. Use of drug information databases
 4. Active participation, as appropriate, in educational courses, conferences, and other organized educational activities both at the local and national levels
- C. Neurodevelopmentalists shall evaluate caseload and practice experience in a systematic manner. This may include:
 1. Case-based learning
 2. Use of best practices through practice guidelines or clinical pathways
 3. Review of patient records
 4. Obtaining evaluations from patients (e.g., outcomes and patient satisfaction)
 5. Employment of principles of quality improvement in practice
 6. Obtaining appropriate supervision and consultation
 7. Maintaining a system for examining errors in practice and initiating improvements to eliminate or reduce errors to ensure public safety
- D. Neurodevelopmentalists shall demonstrate an ability to critically evaluate relevant medical literature. This ability may include:

1. Using knowledge of common methodologies employed in psychiatric and neurologic research
 2. Researching and summarizing specific issues arising from clinical practice
- E. Neurodevelopmentalists shall demonstrate the following abilities:
1. To review and critically assess scientific literature to determine how quality of care can be improved in relation to one's practice (e.g., reliable and valid assessment techniques, treatment approaches with established effectiveness, practice parameter adherence). Within this aim, neurodevelopmentalists shall be able to assess the generalizability or applicability of research findings to their patients in relation to their sociodemographic and clinical characteristics
 2. To develop and pursue effective remediation strategies that are based on critical review of the scientific literature

V. Neurodevelopmental Disabilities Professionalism Core Competencies

- A. Neurodevelopmentalists shall demonstrate responsibility for their patients' care, including:
1. Responding to communication from patients and health professionals in a timely manner
 2. Establishing and communicating back-up arrangements, including how to seek emergent and urgent care when necessary
 3. Using medical records for appropriate documentation of the course of illness and its treatment
 4. Providing coverage if unavailable (e.g., when out of town or on vacation)
 5. Coordinating care with other members of the medical and/or multidisciplinary team
 6. Providing for continuity of care, including appropriate consultation, transfer, or referral if necessary
- B. Neurodevelopmentalists shall demonstrate ethical behavior, integrity, honesty, compassion, and confidentiality in the delivery of care, including matters of informed consent/assent, professional conduct, and conflict of interest.
- C. Neurodevelopmentalists shall demonstrate respect for patients and their families, and their colleagues as persons, including their ages, cultures, disabilities, ethnicities, genders, socioeconomic backgrounds, religious beliefs, political leanings, and sexual orientations.
- D. Neurodevelopmentalists shall demonstrate understanding of, and sensitivity to, end-of-life care and issues regarding provision of care.
- E. Neurodevelopmentalists shall review their professional conduct and

remediate when appropriate.

- F. Neurodevelopmentalists shall participate in the review of the professional conduct of their colleagues.

VI. Neurodevelopmental Disabilities Systems-Based Practice Core Competencies

- A. Neurodevelopmentalists shall have a working knowledge of the diverse systems involved in treating patients of all ages and understand how to use the systems as part of a comprehensive system of care in general and as part of a comprehensive, individualized treatment plan. This shall include the:
 - 1. Use of practice guidelines
 - 2. Practice of evidence-based medicine
 - 3. Ability to access community, national, and allied health professional resources that may enhance the quality of life of patients with NDD
 - 4. Demonstration of the ability to lead and delegate authority to health care teams needed to provide comprehensive care for patients with NDD
 - 5. Demonstration of skills for the practice of ambulatory medicine, including time management, clinical scheduling, and efficient communication with referring physicians
 - 6. Use of appropriate consultation and referral mechanisms for the optimal clinical management of patients with complicating NDD and other systemic conditions
 - 7. Demonstration of awareness of the importance of adequate cross-coverage
 - 8. Use of accurate medical data in the communication with and effective management of patients
- B. In the community system, neurodevelopmentalists shall:
 - 1. Recognize the limitation of health care resources and demonstrate the ability to act as an advocate for patients within their sociocultural and financial constraints
 - 2. Demonstrate knowledge of the legislative and legal aspects of NDD as they impact patients and their families
 - 3. Demonstrate an understanding of risk management
- C. Neurodevelopmentalists shall demonstrate knowledge of and interact with managed health systems, including:
 - 1. Participating in utilization review communications and, when appropriate, advocating for quality patient care
 - 2. Educating patients concerning such systems of care
- D. Neurodevelopmentalists shall demonstrate knowledge of community systems

of care and assist patients to access appropriate care and other support services. This requires knowledge of educational services such as early intervention, preschool programs, educational and vocational programs; lay support organizations; and treatment settings which include ambulatory, consulting, acute care, skilled care, rehabilitation, nursing homes, and home care; and hospice programs. Neurodevelopmentalists shall demonstrate knowledge of the organization of care in each relevant delivery setting and the ability to integrate the care of patients across such settings.

- E. Neurodevelopmentalists shall be aware of safety issues, including acknowledging and remedying medical errors, should they occur.

¹Cultural diversity includes issues of race, gender, language, age, country of origin, sexual orientation, religious/spiritual beliefs, sociocultural class, educational/intellectual levels, and physical disability. Working with a culturally diverse population requires knowledge about cultural factors in the delivery of health care. For the purposes of this document, all patient and peer populations are to be considered culturally diverse.

²Regarding sociocultural issues, for the purposes of this document, “family” is defined as those having a biological or otherwise meaningful relationship with the patient. Such “significant others” are to be defined from the patient’s point of view.

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