



# Boston Children's Hospital

Division of Developmental Medicine



## NEURODEVELOPMENTAL DISABILITIES RESIDENCY TRAINING PROGRAM

Vast, limitless, wide-spectrum, varied. Those are some terms one might apply to a career centered in neurodevelopmental disabilities. There is a constant, growing need for physicians to be trained in this field, making for very exciting opportunities.



## At Boston Children's Hospital, residents in the Neurodevelopmental Disabilities (NDD) Program learn from some of the nation's best practitioners.

Unique to our curriculum is its intermixing of training in both child neurology and developmental medicine, giving residents access to the teaching and perspectives of both training programs.

Continuing in the same tradition as these programs, the NDD program strives to educate the future leaders in the neurodevelopmental disabilities field. Accordingly, resident selections take into account not only academic credentials, but also interpersonal relationship skills, dedication and integrity. The ability to work cohesively with others is central to our program and to the care of each patient.

### Program overview

The NDD program is a four-year curriculum that follows successful completion of two core pediatric training years in an ACGME-accredited program. Upon completion, trainees will have fulfilled:

- adult neurology (12 months)
- clinical child neurology, developmental pediatrics and neurodevelopmental disabilities (18 months)
- clinical and basic sciences (18 months)

Structured blocks include, but are not limited to:

- inpatient child neurology and epilepsy services
- child neurology ICU and inpatient consult teams
- outpatient child neurology and developmental clinics
- adult inpatient consult teams

NDD residents also participate in multispecialty clinics and in assigned

weekly continuity clinics. Additionally, through participation in the Leadership Education in Neurodevelopmental Disabilities (LEND) program, residents hone their interdisciplinary care skills beyond their medical training.

### Clinical training

In addition to training in neurology (see the Child Neurology Residency brochure), NDD residents receive training in developmental-behavioral pediatrics, cognitive neuroscience and child psychology. Residents develop their clinical skills as members of multidisciplinary assessment teams and as pediatric consultants in an outpatient setting. Trainees work with patients longitudinally in a weekly follow-up clinic and in specialty programs including the Autism Care Program and the ADHD Program. Elective experiences may include clinical rotations in clinics including the Adoption Program, Down Syndrome Program and Fragile X Clinic.

### Research program

Research opportunities in NDD at Boston Children's are abundant and encompass basic and translational science, clinical research and health services research. NDD residents participate in weekly research seminars, a journal club and skills training in research design, methods and analysis.

Residents work directly with a research mentor to develop and implement their research projects, and present their research biannually during Works in Progress Sessions and in two formal project presentations each year. Each resident's progress is monitored by the Scholarship Oversight Committee. By the fourth year of training, residents' scholarly work culminates in presentations at regional and national meetings and preparation of a manuscript for publication.

Formal didactic sessions review research design and basic statistical approaches. Residents also have access to methodologists and statisticians to assist in planning studies and analyses, and when appropriate, research assistants to help with aspects of their research. Research computers and standard statistical software are available for use by all NDD residents.

### Examples of current research

- Developmental screening in primary care
- Genetics of autism
- Effects of early institutionalization on child development
- Electrophysiological, metabolic and behavioral markers of infants at risk for autism
- Neural markers for the transition from risk for attention deficit hyperactivity disorder (ADHD) to stable diagnosis
- Evaluation of face processing in children with autism
- Neurocognitive outcomes of infants of diabetic mothers
- Linking music, language and reading
- Catching dyslexia in pre-readers
- Office management of adolescent substance abuse
- Long-term outcomes of ADHD
- Parent, provider and teacher perspectives on quality of ADHD care
- Quality of life in children with ADHD
- Cross-cultural quality metrics for ADHD care



## Formal seminars

The Core Child Neurology Curriculum includes a module of 10 neurodevelopment disabilities lectures, given by members of the faculty. In addition, one of the Longwood Area Neurology Grand Rounds is designated as the Annual NDD lecture. The NDD trainees and faculty work together to select a nationally or internationally known figure in NDD. The NDD residents take a lead role over that visit, presenting patients, acting as hosts, and having the opportunity to interact with the lecturer.

### Developmental Medicine Seminar

This comprehensive weekly seminar follows a rotating, two-year curriculum covering a range of developmental-behavioral pediatric and child psychology core topics including:

- developmental theories and normal development
- attentional and learning disabilities
- autism spectrum disorder
- language disorders
- cognitive impairment
- toileting and sleep problems
- basic principles of psychological and neurodevelopmental assessment
- identifying pediatric mental health concerns
- providing feedback to families
- diagnostic coding and billing
- writing clinical reports

#### Additional topics include

- › psychopharmacology
- › behavioral management
- › behavioral therapies for children with developmental disabilities
- › language and literacy

- › genetic syndromes
- › metabolic disorders
- › chronic illness
- › family functioning
- › cerebral palsy
- › spina bifida
- › sensory impairments
- › feeding problems
- › toxic exposures and outcomes
- › dental health
- › normal sexual behavior
- › sexual and physical abuse
- › substance use and abuse
- › special education law
- › advocacy

The seminar includes one to two field trips per year where NDD residents have an opportunity to visit community agencies, specialized schools or other clinical programs.

" From my earliest days in medicine, I had an interest in both the neurology and developmental fields. Making the decision to choose one over the other proved to be quite a quandary because I did not feel adequate care could be provided to my patients with training from only one facet. Enter the NDD training program! And with it, the opportunity I had dreamed of came to life: to care for neuro-motor challenged patients more comprehensively. Reflecting on the past four years, I have been granted the opportunity to learn from some of the best in the areas of neurology, developmental medicine and genetics. I look forward to serving children with a wide variety of neurodevelopmental disorders, as well as educating the next generation of leaders in this field."

—Elizabeth Barkoudah, MD, 2011 graduate and a neurologist with the Neuromuscular and Cerebral Palsy Programs at Boston Children's Hospital

### Principles of Psychiatry for Developmental Behavioral Pediatrics Seminar

This weekly psychiatry skills seminar provides residents with technical supervision as they acquire clinical skills critical in developmental behavioral pediatrics, such as diagnostic interviewing, generating differential diagnoses and parent/child guidance training. The course trains residents to identify and treat psychiatric disorders including mood disorders, anxiety disorders, eating disorders, psychotic disorders, trauma, suicidality, character pathology, disruptive behavior and conduct disorders. Residents learn about therapeutic modalities including play therapy, cognitive-behavioral therapy and psychopharmacology. The seminar is taught by the previous director of the Psychiatry Residency Program.

### Substance Abuse Seminar

This quarterly interdisciplinary seminar covers substance abuse epidemiology, screening, assessment, interventions and outcomes. Also discussed are the interaction of genes and environment and additional contextual considerations in treatment.

### Teaching Skills Seminar

This seminar introduces residents to adult learning theory and teaches specific skills in lecture development and presentation, facilitation of case discussion, one-to-one clinical teaching, curriculum development, development of a teaching portfolio and evaluation techniques such as giving feedback to trainees. Residents maintain a teaching log and to develop a teaching portfolio compatible with the Clinician-Educator academic track at Harvard Medical School.

### Professional Development Seminar

This seminar provides residents with practical skills for managing professional careers, especially in academics. Topics include professionalism, setting goals, time management, organizational skills, career-family balance, developing effective curriculum vitae and job interviewing skills.



## Entry Requirements / How to Apply

- Two years of training in pediatrics are required for entry into the NDD Residency Program.
- Boston Children's Hospital only offers an advanced match for NDD, for a four-year position beginning in 2015.
- Matching will be done through the Electronic Residency Application Service (ERAS): [aamc.org/students/medstudents/eras](http://aamc.org/students/medstudents/eras). The Neurodevelopmental Disabilities match will be simultaneous with the match for the General Pediatrics residency.

For further information regarding this residency program, please write or call

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## Core Division of Developmental Medicine faculty

(See the Child Neurology Residency brochure for a listing of Department of Neurology Faculty.)

**Leonard Rappaport, MD, MS**

Chief, Division Of Developmental Medicine

**Lisa Albers Prock, MD, MPH**

Associate Director, Developmental Medicine Center

**William Barbaresi, MD**

Director, Developmental Medicine Center

**Carolyn Bridgemohan, MD**

Co-Director, Autism Spectrum Center

**Eugena Chan, MD, MPH**

Director, Fellowship Quality Improvement Program

**Nadine Gaab, PhD**

Director, Gaab Lab

**David Helm, PhD**

Director, Interdisciplinary Training University Center On Developmental Disabilities

**Noelle Huntington, PhD**

Director, Developmental-Behavioral Pediatrics Fellowship Research Program

**John Knight, MD**

Director, Center For Adolescent Substance Abuse Research

**Elaine Leclair, PhD**

Director, Pediatric Psychology Program Developmental Medicine Center

**Charles Nelson III, PhD**

Director Of Research, Division Of Developmental Medicine

**Carrie Mauras, PhD and Alison Schonwald, MD**

Co-Directors, Developmental Medicine Center Training Programs