



**Boston Children's Hospital**  
Until every child is well™



## NEURODEVELOPMENTAL DISABILITIES RESIDENCY TRAINING PROGRAM

Boston Children's Hospital Neurology Department Partnering with  
Developmental Medicine and Complex Care

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 program is a skill on skill spiral of training in both child neurology and developmental medicine. Because of the intermixing of programs throughout the four years, one has multi-access to, and is exposed and interconnected with, both programs on a continual basis. This expands and broadens ones knowledge base and enmeshes the two disciplines into one cohesive curriculum.

Continuing in the same tradition as the Child Neurology and Developmental Medicine training program, the Neurodevelopmental Disabilities program strives to educate the future leaders in this field. Resident selections are made on a culmination of characteristics, which include academic credentials, interpersonal and intrapersonal relationship skills, dedication and unselfishness. The ability to work cohesively with others is central to our program and for the care of each patient.

## 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. NDD residents are also eligible for the R25 research track.

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

## 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 multi-specialty 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.

***“I have found mentors in both Neurology and Developmental Medicine. NDD has given me a special perspective where having rotated in both specialties, I can help identify similarities and differences between them in hopes of shaping our interventions for maximal success.”***

— Nicolas Abreu, MD, NDD Resident, Class of 2019, Boston Children’s Hospital

*"I always wanted to be a doctor who served individuals with disabilities through the lifespan. When I was deciding between specialties, I could never find the perfect fit. As soon as I learned about NDD, and how it combines neurology with developmental training, I knew I found the perfect fit. NDD is allowing me to train in disciplines that will provide me with the background and expertise to be able to serve children and adults with neurodevelopmental disabilities throughout their lifespan, which is my ultimate goal."*

— Jessica Sanders, MD, NDD Resident, Class of 2019, Boston Children's Hospital

## Clinical training

The two year core pediatric curriculum follows what is required by the American Board of Pediatrics.

Requirements in General Pediatrics for Training in Pediatrics — Neurodevelopmental Disabilities (Effective July 2013)	
Component	Educational Unit*
Emergency Medicine & Acute Illness	3 (with at least 2 in ED)
Developmental-Behavioral Pediatrics	1
Adolescent Medicine	1
Term Newborn	1
Inpatient Pediatrics (non-ICU)	5 (no maximum)
Ambulatory Experiences to include community pediatrics and child advocacy	2
NICU	2
PICU	2
**Additional Subspecialty	4 (minimum)

\*Educational Unit = 4 weeks or 1 month OR outpatient longitudinal experience of 32 half-day sessions OR inpatient longitudinal experience of 200 hours

## Rotations

To satisfy board certification requirements, each NDD resident at Boston Children's spends 12 months on adult neurology rotations at our affiliated hospitals. Residents spend approximately nine months during the first year at the Partners Program (Massachusetts General Hospital and Brigham and Women's Hospital) and the Harvard Neurology Program (Beth Israel Deaconess Medical Center) training in the inpatient ward, Neurosurgery and adult ICU. Adult neurology training concludes in the second year on the neurology consult service in the Harvard Neurology Program.

Child neurology clinical training is carried out entirely at Boston Children's with a breadth of inpatient and outpatient training experiences and electives in a wide variety of subspecialties including epilepsy/EEG, inpatient and consult child neurology, ICU/critical care and outpatient child neurology rotations. During the first year, NDD residents have a total of one month of call-free elective time to begin exploring the world of neurodevelopmental disabilities. The beginning of the second year begins with a three month NDD elective "starter pack" exposing residents to various clinical experiences in Developmental Medicine and Complex Care. Throughout the NDD training, residents alternate their continuity clinic between Child Neurology and Developmental Medicine allowing for the ongoing spiral of learning in these two areas. NDD residents also have the option to incorporate other specialized continuity clinics based off of personal interests in their latter training years.

## 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.

### Child Neurology Seminars

- Core lectures twice weekly
- EEG teaching
- Neuroradiology conference
- Chief rounds
- Epilepsy Core conference
- Program to Enhance Relational and Communication Skills (PERCS)

### 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

## Research projects

Incorporated into the NDD training schedule is six months of research time. This can be deployed in an number of ways during training to fulfill the required six month and does not entail a concurrent six month block. Residents can, work alongside investigators at Boston Children's, affiliated Boston hospitals or at the Harvard and MIT Neuroscience programs. Boston Children's offers residents almost limitless opportunities to engage in basic and translational neuroscience, participate in neurology clinical trials and collaborate with cognitive neuroscience investigators. Research in the Department of Neurology Research training is supported by an R25 grant and a T32 grant from the National Institute of Neurological Disorders and Stroke (NINDS). The Neurology Department provides staff support to help residents in their research development, including preparing research proposals and study designs, and reviewing case reports and publications. Additionally, Boston Children's Clinical Research Program aids residents with grants, study protocols, case report forms, surveys, research databases, data or project management, data analysis and education in clinical research methods and practice. Within the Department of Developmental Medicine NDD residents participate in weekly research seminars, a journal club and skills training in research design, methods and analysis. Formal didactic sessions review research design and basic statistical approaches.

*"Since early on in my education, I've been fascinated by the nervous system and the genetic processes underlying its development. Through my medical education and early clinical experiences, I found that I was especially drawn to the developmental aspects of pediatric medicine—finding the greatest satisfaction through helping families with their child's unique developmental needs. When I discovered the field of neurodevelopmental disabilities, I knew that I found a specialty that would perfectly foster my desire to become an expert in neurology and to use this expertise in helping patients with what I would argue is one of the most important facets of pediatrics—development."*

— Michael Oanea, MD, NDD Resident, Class of 2022, Boston Children's Hospital

## Core Division of Developmental Medicine faculty

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

### Department of Neurology

Scott L. Pomeroy, MD, PhD  
*Neurologist-in-Chief*

David K. Urion, MD, FAAN

Elizabeth Barkoudah, MD

Nicole Baumer, MD, Med

April Levin, MD

David Lieberman, MD, PhD

Caitlin Rollins, MD

Sarah Spence, MD

Karen Spencer, MD, MPH

### Developmental Medicine

William Barbaresi, MD

*Director, Developmental Medicine Center*

Carrie Mauras, PhD

*Co-Directors, Developmental Medicine*

*Center Training Programs*

Alison Schonwald, MD

*Co-Directors, Developmental Medicine*

*Center Training Programs*

David Helm, PhD

*Director, Interdisciplinary Training University*

*Center On Developmental Disabilities*

### Complex Care

Kathleen Huth, MD, FRCPC, MMSC (point person)

Laurie Glader, MD

Emily Davidson, MD, MPH

Nedda Hobbs, MD

### Baystate Medical Center

Laura Koenigs, MD, FSAHM, FAAP

*Director, Pediatric Residency Program*

## Entry requirements / How to apply

- Two years of training in pediatrics are required for entry into the NDD Residency program.
- Matching will be done through the Electronic Residency Application Service (ERAS): [aamc.org/ students/ medstudents/eras](http://aamc.org/students/medstudents/eras).
- The NDD Residency program here will be an advanced-preliminary linked match with the two preliminary years of pediatrics at Baystate Medical Center followed by the four years of NDD training at Boston Children's Hospital
- You will still need to apply separately to the General Pediatrics program at Baystate Medical Center

## For further information

### Laura Koenigs, MD, FSAHM, FAAP

*Vice Chair, Education Director, Pediatric Residency Program; Associate Professor of Pediatrics, UMMS-Baystate*

759 Chestnut St, S3581

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413-794-5448

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Or

### Elizabeth Barkoudah, MD

*Assistant, Department of Neurology; Co-Director, Cerebral Palsy and Spasticity Center; Assistant Program Director, Neurodevelopmental Disabilities Residency; Instructor of Neurology, Harvard Medical School*

617-355-6388

[elizabeth.barkoudah@childrens.harvard.edu](mailto:elizabeth.barkoudah@childrens.harvard.edu)

Or

### David K. Urion, M.D., FAAN

*Director, Behavioral Neurology Clinics and Programs; Director of Education and Residency Training Programs in Child Neurology and Neurodevelopmental Disabilities; Charles F. Barlow Chair Department of Neurology; Co-chair, Ethics Advisory Committee, Boston Children's Hospital*

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