2022 - 2023
Neurosurgery Residency Program

Brigham and Women’s Hospital
Founding Member, Mass General Brigham

Boston Children’s Hospital

Harvard Medical School
Neurosurgery Residency Program Overview

Thank you for your interest in the Neurosurgery Residency Program of Brigham and Women’s Hospital, Boston Children’s Hospital and Harvard Medical School. In our program, trainees are exposed to a wealth of neurosurgical pathology. Residents learn the fundamentals of surgical skills, the care of critically ill patients, and the principles of neurologic clinical evaluation, differential diagnosis and interpretation of neuro-imaging. These goals are facilitated by clinical rotations on ancillary services and in the various neurosurgery hospital and clinic services.

A rich and graduated neurosurgical experience and close mentorship by internationally-recognized clinical faculty allow the development and maturation of outstanding operating skills. Technical and clinical experiences are complemented by emphasis on clinical judgment, evidence-based outcome assessment, and thoughtful analysis of morbidity.

On behalf of each faculty member of the Department of Neurosurgery and our team of residents, we can affirm that we have no mission more sacred than that of training the next generation of neurosurgeons.

Contact:
Courtney Gilligan, MHA
Program Administrator
617-732-8719 | cegilligan@bwh.harvard.edu
What you need to know STAT

4,069 surgical cases per year

Neurosurgery and Neurology ranked within top 20 of U.S. News & World Report Honor Roll of Best Hospitals

39 Surgeons and Specialists

21 Residents in training
Clinical Training Program

Program Overview
Neurosurgical training at Brigham and Women’s/Boston Children’s Hospitals/Harvard Medical School is a comprehensive seven-year program designed specifically to prepare each resident for a career in clinical and academic neurosurgery. Neurosurgical training starts during PGY-1 year with rotations in the NICU, neurosciences, pediatrics, and fundamental clinical skills training in the surgical sub-specialties of trauma and plastic surgery with general surgery.

The residency training period is a time of collaboration. Just as the faculty have set goals for the residents to ensure proper training, the faculty have also set goals to ensure the program continues to evolve and adapt to changes in resident education. The guidelines and expectations outlined should be viewed as our ongoing attempt to continuously improve the quality of the training and educational experience of the residents.

Research Opportunities
Residents are provided two years dedicated to research, clinical fellowship, or in pursuit of an advanced degree. Research opportunities in Boston are abundant and include those at the Brigham and Women’s Hospital (BWH), Boston Children’s Hospital (BCH), Massachusetts General Hospital (MGH), Dana Farber Cancer Institute (DFCI), Broad Institute, Wyss Institute, Harvard Medical School (HMS), Harvard School of Public Health, Harvard University (HSPH), and Massachusetts Institute of Technology (MIT).

Educational Opportunities
Resident educational opportunities are an integral part of the program. Residents are encouraged to attend neurosurgical courses throughout their training in their chosen sub-specialty. The program encourages and sponsors residents to present their research at neurosurgery grand rounds and at national conferences including the American Association of Neurosurgical Surgeons, the Congress of Neurological Surgeons, and sub-specialty section meetings.

In addition, BWH residents play an important role educating more junior colleagues and mentoring Harvard Medical Students and its AANS Chapter to host neurosurgical lectures, teach neuroanatomy, introduce surgical skills, and host monthly educational events.
PGY-1 (Intern)

PGY-1s will spend four months on a Critical Care (NICU) rotation. PGY-1s will also spend two months on rotation at BCH, where (s)he shares night-time coverage with rotators from other programs (i.e. BI, MGH, and Tufts). Lastly, PGY-1s will spend four months doing a Nights and Neuroscience rotation focusing on neuroradiology, interventional procedures, and radiosurgery, one month on the Neurosurgery floor service and one month doing Angiography. Residents will be exposed to patients with multiple trauma and head injuries or spinal cord injuries far above and beyond what they currently receive in their NICU rotation.

PGY-2 & PGY-3 (Junior Resident)

PGY-2 neurosurgery residents spend ten months on the BWH service and 2 months at BCH. The BWH service is staffed by three residents depending on rotations from the PGY-2 and 3 residents, each of whom is primarily assigned to one of three inpatient services named the Cushing, Dandy, and Penfield services. PGY-3s will spend nine months on neurosurgical service rotations at BWH, with each two to three month rotation emphasizing spinal disorders, neuro-oncology, or cerebrovascular disorders and their surgical treatments. One month is spent on the neurosurgical service at the MGH with an emphasis on peripheral nerve disorders under the supervision of the MGH neurosurgery program director, Dr. Brian Nahed. Two months are spent at the Boston VA Medical Center in West Roxbury for a longitudinal patient care experience - participating in twice-weekly clinic, operative cases, daily rounding and inpatient care, under the supervision of Dr. Jacob Rachlin and Dr. Michael Mooney.

PGY-4 & PGY-5 (Research Resident)

The bulk of this time is spent in the laboratory completing a research project developed and approved in the PGY-3 year. This experience is strongly encouraged to take place in a laboratory at the Brigham and Women's Hospital, Boston Children's Hospital, Dana-Farber Cancer Institute or Harvard Medical School so that they can continue to participate in teaching conferences. PGY-4 residents participate in the call rotation at BWH, which approximates one call per week and an occasional weekend 24-hour shift. PGY-5 residents do not take call except for emergencies on limited weeks (<6) of the year.

“The first day I was here, I got to do a massive brain aneurysm surgery. The chief resident walked me and taught me through the entire surgery. I got to do more that day than I’d previously done in any day of medical school, including other rotations.”

- Saksham Gupta, PGY-4
PGY-7 (Chief Resident)

The PGY-7 year is spent as Chief Resident and is divided into three 4-month segments, all at BWH. The chief resident also supervises the junior residents, coordinates the entire service including teaching, work rounds, and conferences. He/she must evaluate and manage surgical complications, including organizing and presenting at Morbidity and Mortality (M&M) conferences. The chief resident also has significantly expanded operative experience and he must have passed the ABNS primary examination (written examination) for credit.

PGY-6 (Senior Resident)

PGY-6s will spend eight months on neurosurgical service rotations at BWH, emphasizing on spinal disorders, neuro-oncology, or cerebrovascular disorders and their surgical treatments. (S)he will also spend four months as Chief Resident on the Ingraham neurosurgical service rotations at BCH. The senior resident is generally expected to clearly demonstrate the ability to be or become a skilled and capable neurosurgeon, both clinically and technically.
Neurosurgery Residents 2022 - 2023

Chief Residents

Joseph Driver, M.D.
Loyola University Chicago Stritch School of Medicine

Walid Ibn Essayed, M.D.
Medical Faculty of Tunis, Tunisia

David Segar, M.D.
Warren Alpert Medical School of Brown University

Stanley Bazarek, M.D., Ph.D.
Rosalind Franklin University/Chicago Medical School

Neel Klinger, M.D.
Wayne State University School of Medicine

Maria Muntean, M.D., Ph.D.
University of Illinois College of Medicine at Urbana

PGY-5

Benjamin Johnston, M.D., Ph.D.
Warren Alpert Medical School of Brown University

Ari Kappel, M.D.
Stony Brook University School of Medicine

Genaro Villa, M.D., Ph.D.
David Geffen School of Medicine, UCLA

PGY-4

Joshua Bernstock, M.D., Ph.D.
University of Alabama, Birmingham

Melissa Chua, M.D.
Boston University School of Medicine

Saksham Gupta, M.D.
Harvard Medical School

PGY-3

Marcelle Alinehbari, M.D.
Georgetown University School of Medicine

Joshua Chalif, M.D., Ph.D.
Columbia University College of Physicians and Surgeons

Jason Chen, M.D., Ph.D.
David Geffen School of Medicine, UCLA

PGY-2

Casey Jarvis, M.D.
Keck School of Medicine, USC

Sean Lynn, M.D.
University of Chicago, The Pritzker School of Medicine

James Tanner McMahon, M.D.
Emory School of Medicine

PGY-1

Adam Glaser, M.D.
Geisel School of Medicine at Dartmouth College

David Liu, M.D.
Warren Alpert Medical School of Brown University

Gabrielle Luiselli, M.D.
University of Massachusetts Medical School
BWH Neurosurgery Clinical Faculty

Ossama Al-Mefty, MD
Tracy Ansay, MD
Omar Arnaout, MD
M. Ali Aziz-Sultan, MD
Wenyi Linde Bi, MD, PhD

John Chi, MD, MPH
E. Antonio Chiocca, MD, PhD
Marc Christensen, MD, PhD
Elizabeth Claus, MD, PhD
G. Rees Cosgrove, MD

Kurtus Dufford, MD
Rose Du, MD, PhD
Kai Frerichs, MD
Alexandra Gelby, MD
William Gormley, MD, MPH, MBA

Michael Groff, MD
Kevin Haung, MD
Edward Laws, MD
Yi Lu, MD, PhD
Michael Mooney, MD

Nirav Patel, MD
Pier Paolo Peruzzi, MD, PhD
Jason Rahal, MD
John Rolston, MD, PhD
Stephen Sarris, MD

James Stephen, MD
Danielle Sarno, MD
Timothy Smith, MD, PhD, MPH
Hasan Zaidi, MD
Available Technology

MRI Guided Focused Ultrasound (MRGFUS)

Focused ultrasound treatments can be performed on an outpatient basis, require no incisions, and can result in minimal discomfort and few complications, allowing for rapid recovery. This technology is currently FDA approved for the treatment of essential tremor and is currently being evaluated on its capability to treat parksonian tremor, blood brain barrier, and other neuro conditions via clinical trials here at Brigham and Women’s Hospital.

In early 2020, Brigham and Women’s Hospital became the first site in the United States to treat 100 patients (outside of a clinical trial) with focused ultrasound (FUS).

Advanced Multimodality Image Guided Operating (AMIGO) Suite

A state-of-the-art medical and surgical research environment that houses a complete array of advanced imaging equipment and interventional surgical systems.

ROSA™ Robotic Surgical Assistant

ROSA™ acts as an assistant in the operating room and provides a service to help navigate and map the brain, similar to a GPS.

It can be used in any type of cranial or spinal procedure that requires surgical planning with preoperative data and precise position and handling of instruments.
Available Technology

O-Arm®

The O-arm® and StealthStation® systems eliminate the need to wear lead protective apparel during the navigated steps of the procedure. The O-arm offers multiple image protocols allowing you the flexibility to minimize dose to your patient based on your individual clinical objectives.

Hybrid OR (operating room)

This system allows our staff to perform high-end diagnostic imaging and multiple surgical or non-surgical interventions for an individual patient without ever leaving the operating room.

7 Tesla (7.0T MRI)

This device aids our clinicians and researchers to visualize critical structures and pathologies that until now were not visible by MRI. Seeing these structures and pathologies will help clinicians differentiate between diseases and conditions in which symptoms may be similar and, in turn, choose the best treatment option for patients.

Interventional Neuroradiology Suite

Endovascular procedures are performed in the angiographic suite rather than the operating room. Fluoroscopy (x-rays), ultrasound (US), compute tomography (CT), and magnetic resonance imaging (MRI) are used to guide their way through the body without making a skin incision.
# Weekly Conference Schedule

## Monday

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>7-7:30 a.m.</td>
<td>Cushing Didactics</td>
<td>BWH</td>
</tr>
<tr>
<td>7:30-8:15 a.m.</td>
<td>Neuro-Oncology/Tumor Board Conference</td>
<td>BWH/Dana-Farber</td>
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## Tuesday

<table>
<thead>
<tr>
<th>Time</th>
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<th>Location</th>
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</thead>
<tbody>
<tr>
<td>7-8 a.m.</td>
<td>Dandy Service Teaching</td>
<td>BWH</td>
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## Wednesday

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>6:30-7 a.m.</td>
<td>Morbidity/Mortality Conference</td>
<td>BWH (each Wed except 1st)</td>
</tr>
<tr>
<td>7-8 a.m.</td>
<td>Combined QI Conference</td>
<td>BWH (1st Wed of each month)</td>
</tr>
<tr>
<td>7-8 a.m.</td>
<td>Neurosurgery Grand Rounds</td>
<td>BWH (every Wed except 1st)</td>
</tr>
<tr>
<td>8-9 a.m.</td>
<td>Neuroradiology Conference</td>
<td>BWH</td>
</tr>
<tr>
<td>4-5 p.m.</td>
<td>Movement Disorder Conference</td>
<td>BWH (1st &amp; 3rd of each month)</td>
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## Thursday

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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>7-8 a.m.</td>
<td>Cerebrovascular/Endovascular Conference</td>
<td>BWH</td>
</tr>
<tr>
<td>7-8 a.m.</td>
<td>Skull Base Conference</td>
<td>BWH (every other Thurs)</td>
</tr>
<tr>
<td>9:30-10:30 a.m.</td>
<td>Pituitary Multidisciplinary Conference</td>
<td>BWH (monthly)</td>
</tr>
<tr>
<td>10 a.m.-12 p.m.</td>
<td>Resident Clinics (PGY 2 &amp; 3s)</td>
<td>BCH and BWH</td>
</tr>
<tr>
<td>1-2 p.m.</td>
<td>Epilepsy Conference</td>
<td>BWH</td>
</tr>
<tr>
<td>6:30-7:30 p.m.</td>
<td>Thursday Resident Educational Conference</td>
<td>BWH</td>
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## Friday

<table>
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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>7:30-8:30 a.m.</td>
<td>Neuropathology/Brain Cutting</td>
<td>BWH</td>
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Weekly Conference Schedule Descriptions

Brain Tumor Conference (Monday 7:30-8:15 a.m.):
This conference is a multi-disciplinary effort (neurosurgery, neuroradiology, neuropathology, radiation oncology and neuro-oncology) that reviews current brain tumor patients that have undergone surgery and discusses course of treatment. It also reviews patients where there are questions related to treatment or diagnosis.

Morbidity And Mortality Conference (Wednesday 6:30-7 a.m.):
This weekly conference includes faculty, residents and fellows. Morbidities and mortalities on the service during the prior week are discussed. This incorporates quality discussions as well as risk avoidance.

Grand Rounds (Wednesday 7-8 a.m.):
This weekly conference is an important teaching tool in medical education by providing residents and faculty with a way to stay up to date on important and ever-evolving areas of Neurosurgery and are held in conjunction with other education conferences.

Neuroradiology Conference (Wednesday 8-9 a.m.):
One-hour weekly case-based presentation of recent neurosurgical cases in conjunction with the neurosurgical and neuroradiological attending staff and visiting professors when present.

Skull Base Educational Conference (Thursday 7-8 a.m.):
One-hour weekly conference moderated by a senior skull base neurosurgeon reviewing skull base surgical approaches as well as clinical, pathological and radiographic presentation of many disease processes. Once a month this conference is a multidisciplinary review of several recent cases including radiographic imaging, pathologic imaging, surgical intervention and adjuvant treatment/follow-up care discussions with attending staff from other disciplines (radiology, pathology, neuro-oncology, radiation oncology).

Pituitary/Neuroendocrine Educational Conference (Thursday 9:30-10:30 a.m.):
One hour monthly conference moderated by senior pituitary neurosurgeon reviewing endoscopic and microscopic transsphenoidal surgery approaches as well as clinical, pathological and radiographic presentation of sellar region disease processes. Once a month this conference is a multidisciplinary review of several recent cases including radiographic imaging, pathologic imaging, surgical intervention and adjuvant treatment/follow-up care discussions with attending staff from other disciplines (radiology, pathology, endocrinology).
Weekly Conference Schedule Descriptions

**Epilepsy Conference (Thursday 1-2 p.m.):**
This is a working weekly multi-disciplinary conference that focuses on the surgical management of a single patient with intractable epilepsy. All relevant presurgical evaluation is discussed including clinical history, neuroimaging, EEG findings and neuropsychology. Treatment options including resective surgery, LITT, neuromodulation and invasive intracranial EEG recordings are discussed among the participants and recommendations are made.

**Thursday Resident Education Conference (Thursday 6:30-7:30 p.m.):**
One hour conference reviewing anatomy, surgical approaches and treatment paradigms of various neurosurgical topics using current literature and an interactive format. These conferences are scheduled to complement the summer skull base sessions and other conferences to reinforce concepts and provide additional educational opportunities.

**Neuropathology (Friday 7:30-8:30 a.m.):**
Twelve one-hour lectures that review a variety of brain, spine and peripheral nerve pathology slides with attending neuropathologists. These conferences are coordinated with resident conferences to discuss the clinical aspects related to the neuropathology topic.
Living in Boston

The City

Boston is one of America’s oldest and most revered cities. The largest city in New England, Boston is located at the mouth of the Charles River and the Massachusetts Bay. The area is home to over 50 colleges and universities, and the city’s large, diverse, international population is made up of young professionals, students and families. Residents enjoy the city’s rich history and abundant cultural activities, including Boston’s sports teams, the Boston Symphony orchestra, world class museums and diverse restaurants.

Boston is home to four major league sports teams: the Boston Celtics, Boston Bruins, Boston Red Sox and New England Patriots. The city also hosts the Boston Marathon, the Head of the Charles Regatta, and numerous college and university sports teams.

Brigham and Women’s Hospital

Brigham and Women’s Hospital is located adjacent to Harvard Medical School in the Longwood Medical Area. Longwood is home to some of the nation’s most widely recognized hospitals and healthcare organizations, including Beth Israel/Deaconess Hospital, Boston Children’s Hospital, Dana-Farber Cancer Institute, and the Joslin Diabetes Center. There is an abundance of restaurants and take-out food options located nearby for busy hospital staff. The area also houses the Countway Library, one of the country’s major medical libraries, a number of colleges, the Museum of Fine Arts, and the Isabella Gardner museum. The area is readily accessible through public transportation.
Living in Boston

Recreation

One major advantage of Boston is the accessibility of wonderful places for day or weekend trips. Cape Cod, the Berkshires, Tanglewood, and the mountains and lakes of New Hampshire, Maine and Vermont are all within a few hours drive. Residents engage in activities including: organized sports, hiking, jogging, sailing, and biking throughout the city. Skiing and snowboarding are available after a short drive to local ski resorts.

Living in Boston

Residents choose to live in a variety of communities in and around Boston. Current residents live in a wide variety of locations including: apartments immediately surrounding the hospital, Brookline, Jamaica Plain, Fenway, Mission Hill, Back Bay, South End, Downtown Boston or more distant suburbs. Due to the number of students in the area, apartments often have a high turnover rate and residents rarely have trouble finding housing that works for them.