



Annual Impact Report

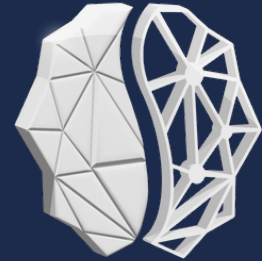
April 15, 2025

2024-2025

team@brainandspinegroup.org
www.brainandspinegroup.org

About Us

Brain & Spine Group is a 501(c)3 charity founded in 2019 for the sole purpose of advancing brain and spine health around the world. Today we engage student leaders across the spectrum of education, mentorship, and research to advance that goal.



Our Mission is to improve brain and spine health globally through education, mentorship, and research with a lasting community service impact.

Learn more about our mission at www.brainandspinegroup.org

Thank You

Sitting down to reflect on the past year and thank our supporters is one of my greatest joys as the CEO of Brain & Spine Group. It's so easy to get caught up in the day-to-day operations and solving the issues not catching traction that often we are too quick to forget the many amazing things that have taken off and positively impacted the world.

In the past year, we've seen the revival of Medical Student Neurosurgery Training Camps, with over 100 students attending training courses with Mayfield Brain & Spine and The University at Buffalo Department of Neurosurgery. We're seeing month-over-month growth in enrollments in our online courses through the *BSG Learn* platform. Our Mentorship Programs continue to

engage more and more students interested in the neuro-careers with greater accessibility for international trainees. And our Research Program is thriving with ever-increasing data availability and technology platforms that allow us to do more in-house work producing academic contributions to the biomedical literature and conferences.



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Thank You for placing your trust and confidence in us with your ongoing support. I hope you share our sense of accomplishment because nothing we've done this past year is possible without you. Cheers to another amazing year of better brain and spine health around the world!

-Ryan Rad

CEO, Brain & Spine Group

Ahead of us is the launch of our own Institutional Review Board (IRB), three more Neurosurgery Training Camps, and added interdisciplinary collaboration across all three of our major program domains - Education, Mentorship, and Research.

Bringing Brain & Spine Group programming beyond "just Neurosurgery," means we're impacting brain & spine health in every arena from inpatient to outpatient and intervention and recovery to prevention and wellness. The year ahead is a stage set to truly be a new chapter with an amazing Board of Directors at the helm.



Board of Directors

On September 1, 2024 the initial five-year term of our founding Board of Directors came to an end. We welcomed five new members to the Board in addition to three members re-elected to new terms. With an emphasis on diversifying clinical scope, our board now boasts expertise in the areas of Neurosurgery, Family Medicine,

Emergency Medicine, Cranio-Cervical Chiropractic, Data Technology, and Behavior Analysis. We have high hopes for expanding education, mentorship, and research into all areas of brain & spine health. Our 2025 Q1 meeting was chalk-full of ambitious plans for the remainder of this year and beyond.



Ryan E. Radwanski, MD
President



Susan C. Pannullo, MD
Secretary



Michael Rothbaum, MD



Michael Kortz, DO



Rosalind Lai, MD



Julia C. Radwanski, DC



Jill Davis, BCBA



James R. Haas

Education in Review

Program Mission

The education program aims to make world-class education in the pre-clinical and clinical neurosciences openly accessible around the world.

Team



Ryan E. Radwanski, MD
Team Lead



Laurel Seltzer
Student Lead



Nikki Barrington



Megan Malueg



Sanjida Riea



Aastha Bhavsar



Kamel Chebaro Toufic



Tania Aguilar

Metrics

In-Person Courses

All Time

5 In-Person Neurosurgery Training Camps
3 Live Virtual Neurosurgery Training Camps

2024 Mayfield Training Camp

Tickets Sold: **30** (100% Capacity)
Students Attended: **21** (70% of Registration)
Institutions Represented: **16**
Cadaver Stations: **4** (2x Spine, 2x Cranial)
Faculty / Resident Participation: **5**
Staff Participation: **5**

2025 Buffalo Training Camp

Tickets Sold: **48** (48% of capacity)
Students Attended: **46** (96% of Registration)
Institutions Represented: **>20**
Cadaver Stations: **7** (4x Spine, 3x Cranial)
Faculty / Resident Participation: **21**
Staff Participation: **2**

YouTube

22 Videos in past year (794 total)
609.9k Views (↑12% year-over-year)
26.9k Hours streamed (↑9%)
5.5k New global subscribers

Total Subscribers: **21,462**
Lifetime Views: **1.7 Million**
Lifetime Hours: **85k**

BSG Learn

403 Registered Users

Virtual Neurosurgery Training Camp: **153 Enrolled**
Introduction to Research: **30 Enrolled**
Foundations of Neurosurgery Subspecialties: **122 Enrolled**
Introduction to Hydrocephalus: **27 Enrolled**

BSG Learn Courses

Stable Releases

- Virtual Neurosurgery Training Camp
- Introduction to Research

Under Review

- Foundations of Neurosurgical Subspecialties
- Introduction to Hydrocephalus

In Development

- Neuroanatomy
- Neuroradiology - Cranial & Spine
- Operating Room Positioning - Cranial & Spine
- Cranial Trauma
- Spine Trauma
- Vestibular Schwannoma
- Glioma & Glioblastoma
- Introduction to Applied Behavior Analysis (ABA)

Future Directions

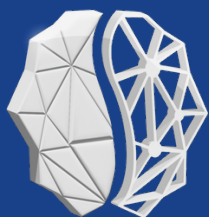
Building upon our successes, we plan to expand our programs, develop new courses, and broaden outreach to additional medical specialties.

Neurosurgery Training Camps

- Expand to East, West, and Midwest
- Increase cadaver lab stations
- Involve more institutions & faculty

Beyond Neurosurgery

- Neurology & Psychiatry Courses
- Regional Cranio-Cervical Chiropractic Workshop
- Applied Behavior Analysis Training Course



YouTube & Resources

- 24/7 Lecture Live Stream
- New Video Series
- Relaunch Brain & Spine Report Articles

BSG Learn

- Continue Self-Paced Course Development
- Implement Question Banks

Mentorship in Review

Program Mission

Our mentorship & early development programs aim to provide equal opportunity to individuals to pursue their career interests in pre-clinical and clinical neurosciences regardless of their personal background, pathways, or logistic means.

NERVE (Neurosurgery Education and Research Virtual Experience Group) is a national virtual interest group designed to supplement medical school by providing a multi-institutional forum for shared objective mentorship. Focus is given to disadvantaged students interested in neurosurgery, neurology, neuroscience, or psychiatry.

END (Early Neurosciences Development) is our newest mentorship program that aims to provide broad-scope, early exploration of the pre-clinical and clinical neurosciences for undergraduate students.

Team



Randy S. D'Amico, MD
NERVE Faculty Director



Susan C. Pannullo, MD
NERVE Faculty Advisor



Alvan Ukawchukwu, MD, MSc
NERVE Faculty Advisor



Nikki Barrington
NERVE Student Director



Jennifer Perrault
NERVE Student Leadership



Nicholas Panico
NERVE Student Leadership



Shubhang (Sean) Bhalla
NERVE Student Leadership



David Doyle
NERVE Student Leadership



Anjali Gupta
NERVE Student Leadership



Jayson Nelson
NERVE Student Leadership



Adam Husain
NERVE Student Leadership



Giselle Ghabussi
NERVE Student Leadership



Sanjida Riea
END Student Director/Founder



Tania Aguilar
END Student Director

Metrics

NERVE '24-'25 Cohort Demographics

6 Returning members
46 Different institutions across 24 states
5 Countries
65.5% MD, 27.3% DO, and 7% IMG
47.3% Women
69% Do NOT have home neurosurgery programs

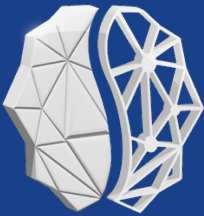
Academics

30+ Conference abstracts/posters to date
27 Manuscripts published to date

Year-by-Year Program Growth

Academic Year	Participants	Institutions Represented
2024-2025	55	46
2023-2024	50	34
2022-2023	42	30
2021-2022	25	15
2020-2021	20	3

Future Directions



NERVE 2025 - 2026

- Leadership recruitment: March–April '25
- New cohort recruitment: April–May '25
- Curriculum Start: September '25

END 2025 - 2026

- Leadership recruitment: March–May '25
- New cohort recruitment: May–June '25
- Curriculum Start: September '25

Research Improvements

- Assess student baseline of research methods
- Improve student preparation for drafting research proposals

Research in Review

Program Mission

The research program aims to provide opportunity and training to the next generation of biomedical researchers who will lead tomorrow’s discoveries.

Teams



Radwanski/Pannullo Research Team
Team Coordinator: Ryan Radwanski, MD

- Educational Methodology
- General Brain & Spine Disease & Injuries
- Socioeconomic Issues in medicine



D'Amico Research Team
Team Coordinator: Nikki Barrington

- Neurosurgical Oncology
- Augmented Reality in the Operating Room
- Innovative Technology in Neurosurgery



Lai Research Team
Team Coordinator: Megan Malueg

- Cerebrovascular Neurosurgery
- Endovascular Neurosurgery
- Sex Differences in Cerebrovascular Disease



Ukachukwu Research Team
Team Coordinator: Nikki Barrington

- Global Neurosurgery
- Community & Public Health
- Accessibility and Equity in Neurosurgical Care

Metrics

Cumulative

76 Student Researchers

64 Ongoing Projects

51 Published Manuscripts

22 Abstracts/Conference Presentations

Radwanski/Pannullo Team

29 Student Researchers

28 Ongoing Projects

24 Published Manuscripts

20 Abstracts/Conference Presentations

D'Amico Team

35 Student Researchers

23 Ongoing Projects

9 Published Manuscripts

2 Abstracts/Conference Presentations

Ukachukwu Team

8 Student Researchers

4 Ongoing Projects

0 Published Manuscripts

0 Abstracts/Conference Presentations

Lai Team

8 Student Researchers

4 Ongoing Projects

0 Published Manuscripts

0 Abstracts/Conference Presentations

Platforming & Resources

Information Systems

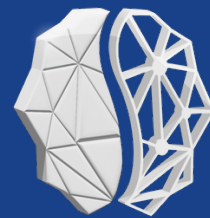
- **Slack (SaaS)** – Team Communication & Project Management
- **Snowflake (SaaS)** – Analytics Warehouse
- **Amazon Web Services** – Server Requisition, Data Object Staging
- **DataHub (Managed)** – Data Catalog
- **Jupyter Hub (Managed)** – Statistical Cloud Notebooks

Data Assets & Accesses

- **National Inpatient Sample** – Cataloged (1993, 2011, 2012, 2013, 2015, 2016, 2017, 2022)
- **National Library of Medicine** – Cataloged
- **All of Us Research Hub**
- **Surveillance, Epidemiology, and End Results (SEER) Research**
- **Parkinson's Progression Markers Initiative (PPMI)**

Future Directions

Strategic priorities to drive research innovation and growth.



1. Team Growth

Establish our first non-neurosurgery research team

2. Increase Data Assets

- Purchase additional HCUP Data Assets
- Add additional Data Use Agreements with specialty registries

3. Improve Data Serving Technology

- Catalog Third-Party Data Assets
- Add self-service querying
- Use LLMs to improve research project ideation, development, data searching, and analysis

4. Systematic Review Technology

Add a new platform to facilitate better collaboration and efficiency for systematic review planning and composition.

5. Library Resources

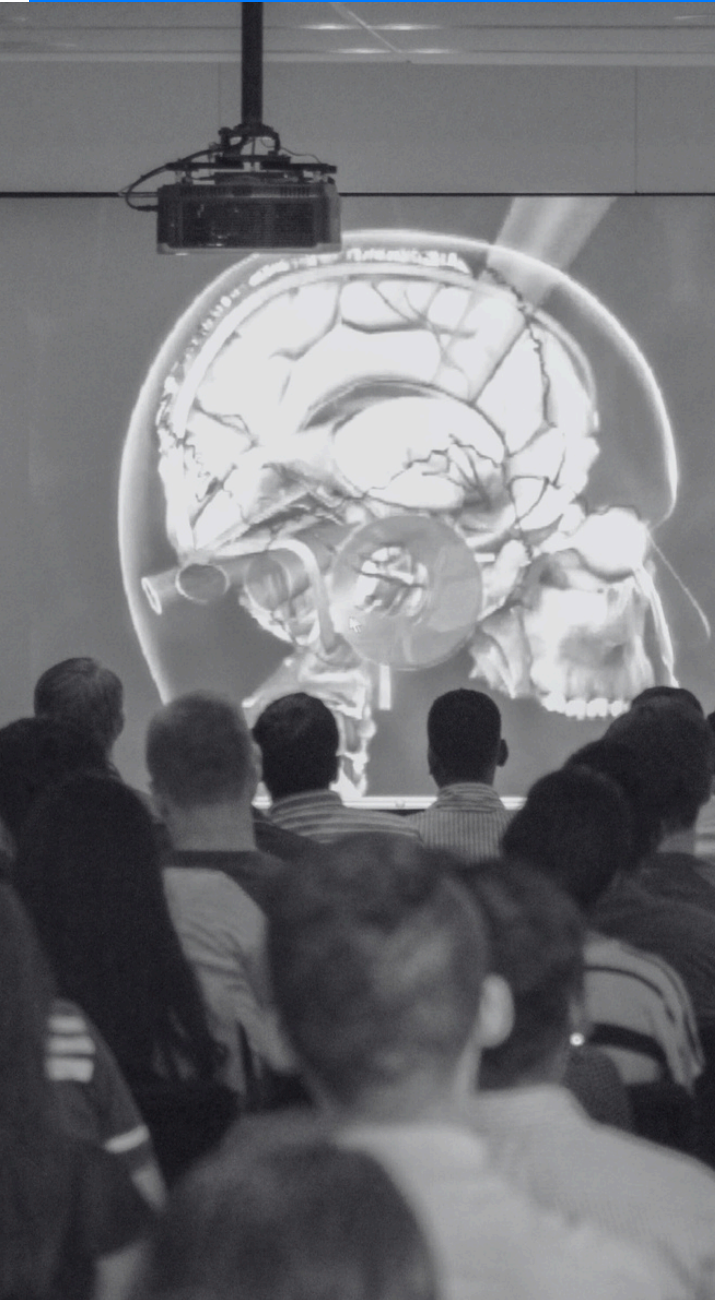
Establish In-House Digital Library Access to Peer-Reviewed Journals.

6. Institutional Review Board (IRB)

Launch In-House IRB to facilitate efficient research oversight.

Our Vision

Our vision for brain & spine health and wellness is one that promotes education without barriers, ample mentorship opportunities, and freedom for creativity in research.



Our Mission

1

Create professional development courses in every health & wellness domain that affects the brain and/or spine.

2

Make the pursuit of neuro-based careers engaging and fulfilling while instilling a passion that transcends the unavoidable challenges.

3

Lower the barrier of resource limitation in research such that the most interested and creative minds can explore any inquiry.

2025-2026 Strategic Plan

1. Neurosurgery Training Camps

1. Cincinnati, OH
2. Twin Cities, MN
3. Buffalo, NY

Anticipating 120+ students in combined attendance.

2. Specialty Series on YouTube

New YouTube video series highlighting interviews with specialists across all Brain & Spine career fields.

3. Expand Course Offerings

Publish openly accessible online courses in neuroanatomy, neuroradiology, and behavior therapy.

4. New Undergrad Mentorship

New program for undergraduate students to explore career tracks in research, clinical, and alternative Brain & Spine careers.

5. Expand Medical Student Mentoring

In it's 6th year of operations, the NERVE program will be led by a new leadership team and welcome it's largest cohort of students to date.

6. Institutional Review Board (IRB)

Our IRB team will start receiving limited research proposals for approval and oversight. This step will make the BSG Research program full-scope.

Thank You

Brain and Spine Group would like to thank our network of donors and volunteers who selflessly give their funds and time in pursuit of a shared mission to improve brain and spine health globally.

Thank you to all our industry partners who contribute their time, resources, and funding to make our Training Camp experiences an educational highlight for students.



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**BRAIN & SPINE
GROUP**