

Name: Jessica Lauren Barley PhD, CNIM

Home Address:

5204 Foxhall Lane
Springfield, IL 62711

Phone:(843) 754-2737

Office Address:

99 Johnathan Lucas St
Charleston, SC 29425
College of Nursing 509

Email: barley3111@icloud.com

Citizenship: USA

Education: Tallahassee Community College	2004-2006	A.A	Psychology	GPA 4.0 with honors
Florida State University	2006-2008	B.S.	Neuroscience/Biology	GPA 4.0 with honors
Medical University of South Carolina	2010-2014	Ph.D.	Rehabilitation Science	GPA 3.9 with honors

Specialty/Board Certification: Board Certification in Neurophysiologic Intraoperative Monitoring (CNIM) 2009-present

Faculty Appointments:

2021	Affiliate Assistant Professor-Department of Neurology	Medical University of South Carolina
2022	Affiliate Assistant Professor-Department of Neurosurgery	Medical University of South Carolina
2025	Adjunct Associate Professor-Department of Surgery	Southern Illinois University School of Medicine

Administrative Appointment:

2024	Founding Director CNPS Education and Training Program	Medical University of South Carolina
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Major Clinical Interests and Responsibilities:

Intraoperative Neurophysiologic Specialist, MUSC Department of Clinical Neurophysiology 2009-2015

Administrative & Intraoperative Neurophysiologic Monitoring Coordinator, MUSC Department of Clinical Neurophysiology 2015-2024

Professional Society Memberships:

Member American Board of Registration of Electroencephalographic and Evoked Potential Technologists (ABRET) 2020-2025

Member of American Society of Neurophysiologic Monitoring (ASNM) 2014-2026

Member of American Clinical Neurophysiologic Society (ACNS) 2014-2026

Member of International Society of Intraoperative Neurophysiology (ISIN) 2024-2026

International Federation of Clinical Neurophysiology (IFCN), in the North American Chapter with the American Association of Neuromuscular & Electrodagnostic Medicine (AANEM) and Canadian Society of Clinical Neurophysiologists (CSCN).

Awards, Honors, Membership in Honorary Societies:

MUSC Chapter of the National Academy of Inventors (2022, 2024)

RhythmLink Hero (2021)

MUSC Innovation Award (2021)

Summa cum Laude with Honors -Florida State University (2008)

Florida State University Honors Program (2007-2008)

Presidents' List-Florida State University (2006-2008)

National Dean's List (2004-2008)

Phi Beta Kappa (2007)

Phi Theta Kappa (2006)

Phi Kappa Phi (2006)

Psi Chi (2006)

Golden Key Honor Societies (2005)

Leadership Roles and Committee Activities:

SIU Department of Neurosurgery Intraoperative Neurophysiology (IONM) Program Development Lead (2026)
ABRET CNIM JTA Steering Committee (2026)
MUSC Cost Validation Committee (2025-present)
MUSC Finance Executive Committee (2025-present)
Expert Panel Nervio AI (2025-present)
Next Level Leadership Program (2025-2027)
University of Michigan Academic Program Advisory Committee (2025-present)
MIND Committee Member (2024-present)
ACNS IONM Special Interest Group Member (2023-present)
Laboure College Academic Advisory Committee (2022-2026)
IMPACT Neuro Conference committee member and organizer (2024)
Navigating Excellence MUSC Leadership Development (2024)
MUSC Neurosurgery Resident Research Executive Committee co-founder, member, mentor, and educator (2021-present)
Nexstim Transcranial Magnetic Stimulation (NEXSTIM) product and program initiation and implementation (2021-present)
National Lab Accreditation in Neurophysiologic Intraoperative Monitoring (2019-present)
National Counsel for Academic Programs in IONM (2018-present)
ABRET CNIM Board Exam Committee member and content writer (2018-2019)
Communication Advisory Counsel for Medical University Hospital Authority (2018-2019)
Neurology Resident and Fellow educator and mentor (2017-present)
MUSC Spine Center Member (2015-2024)
Committee Chair for Neuroscience Symposium at the Medical University of South Carolina (2013)

Major Teaching Responsibilities:

SIU Neurosurgery Neurophysiology Program Lead Educator & Research Mentor (2026)
Founding Director CNPS Education and Training Program
MUSC Neurosurgery and Neurology Resident and Fellow Educator and Research Mentor (January 2021-present)
Clinical Instructor for Laboure College IOM Program for IOM Clinical Rotations (September 2017-Present)
Course Facilitator Medical University of South Carolina, Charleston, SC (January-April 2012) 
IP 710-Transforming Healthcare for the Future
First-year medical, pharmacy, nursing, perfusion, CRNA, PA (Physician Assistant), PT, OT students
Teaching Assistant Medical University of South Carolina, Charleston, SC (August-December 2011)
HRS 819-Creating Collaborative Care
First-year medical, pharmacy, nursing, perfusion, CRNA, PA, PT, OT students

Invited Lectures:

- April 2026. One Case Many Perspectives. MUSC Annual MIND Conference invited speaker. Charleston, SC
- March 2026. IONM Data Changes- Reacting, Intervening and Postoperative Follow-up. Neurosurgery Conference SIU invited speaker. Southern Illinois University School of Medicine
- February 2026. A Comprehensive Overview of Intraoperative Neurophysiology. Department of Neurosurgery Loyola University invited speaker, Chicago, IL
- February 2026. IONM Complex Mapping Techniques and Procedures. Neurosurgery Conference SIU invited speaker. Southern Illinois University School of Medicine
- January 2026. IONM Modalities in Spine Procedures. Neurosurgery Conference SIU invited speaker. Southern Illinois University School of Medicine
- November 2025. Overview of Intraoperative Neurophysiology. Neurosurgery Conference SIU invited speaker. Southern Illinois University School of Medicine
- May 2025. Training the Next Generation of Neuromonitoring Specialists: Key Strategies and Principals. MUSC MIND Conference invited speaker. Charleston, SC
- May 2025. Challenges and the Future of Intraoperative Neurophysiology (IONM) invited speaker. ASNM Annual Meeting. Denver, CO
- April 2024. Functional Mapping from Cortex to Brainstem: Part 1. MUSC Department of Neurology Fellow Lecture Series invited speaker. Charleston, SC
- November 2023. Intraoperative Neurophysiological Monitoring During Lead Placement for Dorsal Root Ganglion Stimulation: A Literature Review and Case Series. Principles and Practice of Intraoperative Neuromonitoring. Invited lecturer and faculty member speaker. UPMC, Pittsburgh, PA
- June 2022. Effective Utilization of IOM. MUSC Department of Neurosurgery Grand Rounds invited speaker. Charleston, SC

- June 2022. Functional Mapping from Cortex to Brainstem: Part 2. MUSC Department of Neurology Fellow Lecture Series invited speaker. Charleston, SC
- April 2022. Functional Mapping from Cortex to Brainstem: Part 1. MUSC Department of Neurology Fellow Lecture Series invited speaker. Charleston, SC
- February 2022. IONM and Anesthesia: Making the OR Great Again. MUSC Department of Anesthesia and Perioperative Medicine Grand Rounds invited speaker. Charleston, SC
- February 2022. IONM at MUSC: Improving Quality, Safety while Reducing READ, LOS Poor Outcomes and Medico-Legal Liability. Spine Bundle Meeting: Clinical Care Pathways and Value Evaluation. Invited Speaker for MUSC Spine Center. Charleston, SC
- January 2022. Clinical Neurophysiology Education and Training Program. Strategy Executive Committee (SEC) Invited Presentation. Charleston, SC
- December 2021. A Comprehensive Overview of Intraoperative Neurophysiology. Invited speaker for Neurology Resident Academic Day. Charleston, SC
- October 2021. IONM at MUSC: Improving Quality, Safety while Reducing READ, LOS Poor Outcomes and Medico-Legal Liability. Perioperative Quality Assurance & Performance Improvement Committee invited speaker. Charleston, SC
- August 2021. IONM at MUSC: Improving Quality, Safety while Reducing READ and LOS. Perioperative Executive Committee invited speaker. Charleston, SC
- August 2021. Functional Mapping from Cortex to Brainstem. Invited speaker to MUSC Neurosurgery Academic Day.
- June 2021. Clinical Neurophysiology Program Proposal in the College of Health Professions. Invited speaker to the faculty and dean of the College of Health Professions. Charleston, SC
- April 2021. A Comprehensive Overview of Intraoperative Neurophysiology. SC Chapter of ASET Spring Educational Conference invited speaker. Charleston, SC
- April 2021. The Value of Intraoperative Neurophysiology in Vascular Surgery. MUSC Department of Vascular Surgery Faculty and Resident Conference invited lecturer. Charleston, SC
- March 2021. Functional Mapping from Cortex to Brainstem. MUSC Department of Neurology Grand Rounds invited speaker. Charleston, SC
- February 2021. Neurophysiology and Anesthesiology: A Symbiotic Relationship. MUSC Department of Anesthesia and Perioperative Medicine Grand Rounds invited speaker. Charleston, SC
- February 2021. A Comprehensive Overview of Neurophysiology in Neurosurgery. MUSC Department of Neurosurgery Academic Day invited speaker. Charleston, SC
- September 2020. Critical Moments in Surgery. MUSC Department of Neurology, Fellow & Resident Lecture Series. Charleston, SC
- June 2020. Functional Mapping. MUSC Department of Neurology, Fellow & Resident Lecture Series. Charleston, SC
- April 2020. Assessing Correlation between Radiographic and Intraoperative Electrophysiological Monitoring Findings Consistent with Nerve Root Encroachment for Adult Spine Patients Undergoing Elective Sacroiliac Fusion. Oral Presentation. International Society for the Study of the Lumbar Spine-Spine week 2020. Melbourne, Australia. (Postponed due to COVID-19)
- April 2020. 2020 MUSC Health Spine Conference-The Past, Future, and Politics of Spine Care. Lost in Translation: Communicating Neurophysiology Data in the OR. Charleston, SC
- February 2020. Neuromonitoring and Anesthesia Implications: A Review. MUSC Department of Certified Registered Nurse Anesthetists invited speaker. Charleston, SC
- February 2020. A Comprehensive Overview of Intraoperative Neurophysiology. MUSC Department of Neurology Grand Rounds invited speaker. Charleston, SC
- September 2018. Limbs Need Love Too-Case Presentation. Conference Canadian Association of Neurophysiological Monitoring. Toronto, CA
- August 2018. Neurophysiologic Intraoperative Monitoring in Orthopedics and Beyond. MUSC Department of Orthopedic Surgery Grand Rounds invited speaker.
- April 2018. 2018 MUSC Spine Conference – Controversies in Spine Care. Algorithm for Intraoperative Signals Loss: What do I do now? Kiawah, SC
- April 2018. 2018 MUSC Spine Conference – Controversies in Spine Care. Evidence for Neuro-monitoring in Spinal Surgery. Kiawah, SC
- August 2017-present. Intraoperative Monitoring. MUSC Neurosurgery case conference invited lecturer. Charleston, SC
- September 2016-present. Overview of Common IOM Procedures. MUSC Neurology Fellow conference invited lecturer. Charleston, SC
- February 2016. IOM and Anesthesia, Why Can't We All Just Get Along? MUSC Department of Anesthesia Grand Rounds invited speaker. Charleston, SC

- May & April 2014. Neurophysiologic Intraoperative Monitoring. MUSC Department of Neurosurgery and Orthopedic surgery resident conference invited lecturer. Charleston, SC
- April 2013. Gender differences in stroke recognition among stroke survivors. First Annual Women's Health Research Day, Charleston, SC.

Mentoring:

Jeff Wessell DO, Neurosurgery 2021-2013 Neurosurgery Primary Mentor and co-PI
 Brian Saway MD, Neurosurgery, 2021-present Neurosurgery Primary Mentor and co-PI
 Ezequiel Gleichgerricht MD, PhD, 2015-2021-Neurology mentor and co-PI
 Lei Lu MD, Neurology 2022-2024-Neurology Primary Mentor and co-PI
 Syndey Rucker, 2024-present-Medical Student Co-mentor and co-PI
 Lindsey Akers MS, CNIM 2018-present-Intraoperative Neuromonitoring Specialist
 Lakota Jones MS, CNIM 2022-present- Intraoperative Neuromonitoring Specialist
 Analeigh Tucker MS, CNIM 2023-present- Intraoperative Neuromonitoring Specialist
 Jaye Lohman MS, CNIM 2024-2025- Intraoperative Neuromonitoring Specialist
 Jessie Thompson BS, CNIM 2015-present- Intraoperative Neuromonitoring Specialist
 Jamie Kay Cooner BS, CNIM 2015-present- Intraoperative Neuromonitoring Specialist
 Kendra Blackstock BS, CNIM 2023-present- Intraoperative Neuromonitoring Specialist
 Dori Floyd BS, CNIM 2025-present- Intraoperative Neuromonitoring Specialist
 Da'Ressa Andrews BS, CNIM-2019-present- Intraoperative Neuromonitoring Specialist
 Brittany Webb BS, CNIM-2020-2022- Intraoperative Neuromonitoring Specialist

Current Research Activities:

Evaluation and Comparison of Transabdominal Motor Evoked Potentials during Lumbar and Pelvic Spine Surgery- Co-Principal Investigator. 2023-present
 Contrast Enhanced Ultrasound for The Evaluation of Intraoperative Spinal Cord Injury Following Surgical Decompression of a Chronically Compressed Spinal Cord-Co-Principal Investigator. 2023-2025
 Use of Intraoperative Neurophysiological Monitoring in Spinal Surgery-o-Principal Investigator. 2024-2025.

Key:

Graduate Student #
 Medical Student *
 Resident +

Publications:

Peer Reviewed Journal Articles- Original Manuscripts:

1. Gerend M. & **Barley J.** (2009). Human papillomavirus vaccine acceptability among young adult men. Sexually Transmitted Disease, 36(1):58-62. doi: 10.1097/OLQ.0b013e31818606fc.
2. **Barley J.**, Mooney JF III, Glazier SS, Johnson T, Kornegay A, Turner RP, Edwards JC. (2010). Sudden appearance of new motor function in the upper extremity while performing neurophysiologic intraoperative monitoring during tethered cord release – a case report. Journal of Pediatric Orthopaedics Sep;30(6):624-8. doi: 10.1097/BPO.0b013e3181e79041.
3. **Barley, J.** & Ellis, C. (2012). The silent killer disparities: Race, gender and residence. International Journal of Person-Centered Medicine, 2(4), 693-697. doi.org/10.5750/ijpcm.v2i4.292.
4. Ellis, C., **Barley, J.**, & Grubaugh, A.L. (2013). Post-Stroke Knowledge and Symptom Awareness: A Global Issue for Secondary Stroke Prevention. Cerebrovascular Diseases. 2013 Jul 6;35(6):572-581. doi.org/10.1159/000351209.
5. **Barley, J.** & Ellis, C. (2013). Microvascular decompression: A Surgical Option for Refractory Hypertension of Neurogenic Etiology. Expert Review of Cardiovascular Therapy. May;11(5):629-34. doi.org/10.1586/erc.13.30.
6. **Barley, J.** & Ellis, C. (2013). Microvascular decompression surgery for refractory hypertension of neurogenic causes. The Journal of Clinical Hypertension. Mar;15(3):217. doi: 10.1111/jch.12019.
7. Beckett, J., **Barley, J.** & Ellis C. (2015). Patient perspectives of barriers and facilitators of treatment seeking behaviors for stroke care. Journal of Neuroscience Nursing, 47(3):154-159. doi: 10.1097/JNN.000000000000134.
8. Henderson, F+., Hubbard, Z+., Jones, S.*, **Barley, J.**, & Frankel, B. (2020). Endoscopic Decompression of Epidural Spinal Metastasis Causing Lumbar Radiculopathy through a Transforaminal Approach: Report of Two Cases. AME Case Reports, 4. doi:10.21037/acr.2019.12.02.
9. Alshareef, M.+., Klapthor, G*., Alawieh, A.*, **Barley, J.**, Lowe, S.*, Cachia, D., Frankel, B. (2020). Evaluation of Open and Minimally Invasive Spinal Surgery for the Treatment of Thoracolumbar Metastatic Epidural Spinal Cord Compression: A Systematic Review. European Spine J. 2021. doi: 10.1007/s00586-021-06880-7.

10. Kulbarsh, K.#, **Barley, J.**, Wharton, J.#, Harvey, S.#, Goodier, C.#, Rowland, N. (2020). Case Report: Awake Craniotomy for Resection of Glioblastoma Multiforme in Pregnancy. *Clinical Neurology and Neurosurgery*. 2022 May; 216:107218. doi: 10.1016/j.clineuro.2022.107218. Epub 2022 Mar 22. PMID: 35367747
11. Saway, B+., Webb, T.+., Weber, A.+., Triano, M.+., **Barley, J.**, Spampinato, M.+., Rowland, N. (2023). fMRI-guided Motor Cortex and Deep Brain Stimulation for Intractable Facial Pain: A Novel, Personalized Approach in One Patient. *Operative Neurosurgery (Hagerstown)*. 1;24(1):103-110. doi: 10.1227/ons.0000000000000440.
12. Lu, L.+., Akers, L.#, Lau, M., Selassie, M., Burke, M., Gleichgerrcht, Z., Hillegass, M., **Barley, J.** (2023). Intraoperative Neurophysiological Monitoring During Lead Placement for Dorsal Root Ganglion Stimulation: A Literature Review and Case Series. *Neuromodulation*. S1094-7159(23)00621-9. doi: 10.1016/j.neurom.2023.04.468.
13. Saway, BF+., Cunningham, C.*., Pereira, M.+., Sowlat, M.*., Elawady S.*, Porto, G.+., **Barley J.**, Frankel B. (2024). Robotic Endoscopic Transforaminal Lumbar Interbody Fusion: A Single Institution Case Series. *World Neurosurgery*: X. 2024 May 1:23:100390. doi: 10.1016/j.wnsx.2024.100390.
14. Saway, BF.+., Courtney, J.*., **Barley J.**, Frankel, B., Hofstetter, C, Kalhorn S. (2024). Contrast enhanced ultrasound for traumatic spinal cord injury: an overview of current and future applications. *Spinal Cord Ser Cases*. Apr 25;10(1):31. doi: 10.1038/s41394-024-00644-3. PMID: 38664470; PMCID: PMC11045808.
15. Rucker, S.*., Rivas, G.#, **Barley, J.**, Korte, J., Lawrence, J., Ravinsky, R. (2024). The Use of Intraoperative Neuromonitoring in Anterior Cervical Spine Procedures for Myelopathy; Alert Incidence, Interventions, and Prognostic Value. *Clinical Spine Surgery*. (2025).
16. Saway, BF.+., Routkevitch, D*., Rishishankar, S*., Weber, A+., Small, C.+., **Barley, J.**, Varma, A., Rowland, N. Theodore, N., Frankel, B., Kalhorn, S. (2025). Contrast Enhanced Ultrasound Perfusion Imaging of The Spinal Cord Before and After Surgical Decompression for Spondylotic Cervical Myelopathy. *Neurosurgery* (2025).
17. Transabdominal Motor Evoked Potentials as a Robust Adjunct to Transcranial Monitoring in Lumbar Spine Surgery: Favorable Monitorability in Patients with Brain Pathology. Rucker, S., Stitt, L., **Barley, J.**, Ferdon, R., Glaser, J., Ravinsky, R., Gleichgerrcht, E. *Spine*. (2026)

Peer Reviewed Journal Articles – Letter to the Editor:

1. Saway, BF+., **Barley, J.**, Frankel, B., Kalhorn, S. Letter to the Editor: Letter to the Editor Regarding “Microbubble Contrast-Enhanced Transcutaneous Ultrasound Enables Real-Time Spinal Cord Perfusion Monitoring Following Posterior Cervical Decompression” *World Neurosurgery*, Volume 124, February 2025, 123625

Abstract Presentations at Regional, National and International Conferences (e.g., Oral or Poster Presentations)

1. Ali Tabesh, Jens H. Jensen, Joseph A. Helpert, Rachael Deardorff, Amanda Allen, **Jessica L. Barley**, Jonathan C. Edwards, Leonardo Bonilha. (2011). *A Preliminary Diffusional Kurtosis Imaging Study of Medial Temporal Lobe Epilepsy*. Radiology and Radiological Science, Medical University of South Carolina, Charleston, SC, USA, Comprehensive Epilepsy Center, Neurosciences
2. Cormack Carrie, Nichols Michelle, Madisetti Mohan, Seidenschmidt, Lauren Ashley, **Barley, J.** (2022). *Facilitating Mentorships to Foster Investments in the Future*. MUSC 2022 Innovation Week Poster Session, Medical University of South Carolina, Charleston, SC, USA
3. Jones L #, **Barley J**, Akers L #, Tucker A #, Cooner JK, Gleichgerrcht E, Rivas G, Glaser J. Use of Transabdominal Motor Evoked Potential Neurophysiological Monitoring – A Single Institution’s Experience. 2024 International Society for the Study of the Lumbar Spine 50th Annual Meeting. May (2024).
4. Jones L #, **Barley J**, Akers L #, Tucker A #, Cooner JK, Gleichgerrcht E, Rivas G, Glaser J. Use of Transabdominal Motor Evoked Potential Neurophysiological Monitoring – A Single Institution’s Experience. Southern Orthopaedic Association 41st Annual Meeting. July (2024).
5. Saway BF+, Courtney J*, **Barley J**, Frankel B, Hofstetter C, Kalhorn S, Varma, A, Rowland, N, Weber, A +. Contrast Enhanced Ultrasound for The Evaluation of Intraoperative Spinal Cord Perfusion Before and After Surgical Decompression of a Chronically Compressed Spinal Cord. Congress of Neurological Surgeons. Annual Meeting. September 2024.
6. Rucker S *, Silvestre J, **Barley J**, Korte J, Glaser J, Reitman C, Lawrence J, Ravinsky R. The Use of Intraoperative Neuromonitoring in Anterior Cervical Spine Procedures for Myelopathy; Alert Incidence, Interventions, and Prognostic Value. Podium Presentation at the Global Spine Congress, May 29th, 2025, Rio de Janeiro, Brazil.
7. Rucker, S.*, Walton, C., Jones, L., **Barley, J.**, Ravinsky, R. Intraoperative Neuromonitoring in Diabetic Spine Surgery Patients: A Multivariate Model for Predicting Neurological Risk. Southern Orthopaedic Association Annual Meeting. July 2026. White Sulphur Springs, WV.
8. Stitt, L #, Rucker, S.*., Gleichgerrcht, Z., Ravinsky, R., **Barley, J.**, Glaser, J. Transabdominal Motor Evoked Potentials as a Robust Adjunct to Transcranial Monitoring in Lumbar Spine Surgery: Superior Performance in Patients with Brain Pathology. Accepted Global Spine Congress. May 2026. Istanbul, Turkey

Innovation:

Coinventor for Guardian Needle™ Electrode 27 MAY 2020 Rhythmink International, LLC Page 1 510(k) Summary – K200984.
807.92(a)(1) Submitter Information. Rhythmink International, LLC

Patent Number: US 10,932,683 B2. Date of Patent March 2, 2021

Needle Electrode Fixation Device and Associated Methods-Patent Number: US 11, 690,549 B2. Date of Patent July 4, 2023