

# Raymond D. Turner, IV, M.D.

## ***Employment***

7/08 – Present **Medical University of South Carolina**

Assistant Professor

Department of Neurosciences

Division of Neurological Surgery/Division of Neuroradiology

*Director* – MUSC Stroke and Cerebrovascular Service Line

*Associate Director* – MUSC Neurosurgery Residency Education

## ***Education***

9/94 – 6/98 **Sacred Heart University**

Fairfield, Connecticut

*Bachelor of Science (Biology)*

8/98 – 6/02 **Karol Marcinkowski University of Medical Sciences**

Poznan, Poland

*Doctorate of Medicine*

## ***Training***

7/02 – 12/02 Internship Surgery - SUNY – Downstate Health Sciences Center – Brooklyn

1/03 – 6/03 Internship Surgery - Cleveland Clinic Foundation

7/03 – 6/08 Residency Neurological Surgery - Cleveland Clinic Foundation

7/06 – 6/07 Fellowship Endovascular Neurosurgery - Cleveland Clinic Foundation

7/08 – 6/09 Fellowship NeuroInterventional Surgery – Medical University of South Carolina

## ***Licensure***

Active National Provider

Active State of Ohio Medical License

Active State of South Carolina

## ***Certification***

Education Commission of Foreign Medical Graduates (ECFMG), Issued June 24, 2002

American Heart Association ACLS/BCLS

Gamma Knife RadioSurgery – Cleveland Clinic Foundation, Issued March, 2006

## ***Professional Associations***

American Association of Neurological Surgeons

American Society of Interventional Therapeutic Neuroradiology

Society of NeuroInterventional Surgeons

Congress of Neurological Surgeons

CNS/AANS Cerebrovascular Joint Section

Council of State Neurosurgical Societies

South Carolina Medical Society

## ***Presentations/Abstracts***

1. **Turner R**, Chahlavi A, Rasmussen P, Brody F: Laparoscopic Revision of a Ventriculoperitoneal Shunt: Case Report and Review of the Literature. **Congress of Neurological Surgery**, Denver, Colorado, October 2003
2. **Turner R**, Luciano M: Minimally Invasive Ventriculoperitoneal Shunts: Cleveland Clinic Neuroendoscopy Course, Cleveland Clinic Foundation, Cleveland, Ohio, May, 2005

3. **Turner R**, Gonugunta V, Weil R, Fiorella D: IA Nicardipine for Post Traumatic Vasospasm. **AANS/CNS Cerebrovascular Section/ASITN**, Orlando, Florida, February 2006
4. Nfonsam V, **Turner R**, Luciano M, Chand B, Rosenblatt S: Laparoscopic Management of Distal Ventriculoperitoneal (VP) Shunt Complications. **Society of American Gastrointestinal and Endoscopic Surgeons (SAGES)**, Dallas, Texas. April 2006
5. **Turner R**, Rosenblatt S, Chand B, Luciano M: Laparoscopic Distal Peritoneal Catheter Placement. **American Association of Neurological Surgeons**, San Francisco, California, April 2006
6. Kelly M, **Turner R**, Gonugunta V, Woo H, Rasmussen P, Masaryk T, Fiorella D. Stent Reconstruction of Wide Necked Aneurysms Across the Circle of Willis. **AHA/ASA International Stroke Conference & AANS/CNS Joint Cerebrovascular Section Meeting**, San Francisco, CA. February 2007.
7. Albani B, Gonugunta V, **Turner R**, Kelly M, Woo H, Fiorella D, Rasmussen P, Johnson L, Masaryk T. Detection of Acute Brain Hemorrhage Utilizing Amorphous Silicon Flat-Panel-Based Cone Beam CT. **American Society of NeuroRadiology** Chicago, IL June 2007
8. Kelly M, **Turner R**, Gonugunta V, Woo H, Rasmussen P, Masaryk T, Fiorella D. Stent Reconstruction of Wide Necked Aneurysms Across the Circle of Willis. **42<sup>nd</sup> Canadian Neurological Sciences Federation**, Edmonton Alberta, Canada, June 2007
9. **Turner R**, Gonugunta V, Kelly M, Masaryk T, Fiorella D. Successful Retrieval of Errant Neuroform Stents: Technique and Discussion of Four Cases. **American Society of Interventional Therapeutic Neuroradiology (ASITN)**, Dana Point, CA, July 2007
10. **Turner R**, Byrne J, Kelly M, Gonugunta V, Mitsos A, Masaryk T, Rasmussen P, Fiorella D. Delayed Visual Deficits and Monocular Blindness after Endovascular Treatment of Paraophthalmic Aneurysms. **American Society of Interventional Therapeutic Neuroradiology (ASITN)**, Dana Point, CA, July 2007
11. Kelly M, Fiorella D, **Turner R**, Gonugunta V, Masaryk T, Rasmussen P, Woo H. Initial Experience with Onyx for the Embolization of Cerebral Arteriovenous Malformations. **American Society of Interventional Therapeutic Neuroradiology (ASITN)**, Dana Point, CA, July 2007
12. Gonugunta V, Kelly M, Woo H, **Turner R**, Fiorella D. Double Balloon Trapping Technique for the Embolization of a Large, Wide-Necked Basilar Trunk Aneurysm Incorporating the Superior Cerebellar Artery – a case report. **American Society of Interventional Therapeutic Neuroradiology (ASITN)**, Dana Point, CA, July 2007
13. Gonugunta V, **Turner R**, Kelly M, Albuquerque F, McDougall C, Rasmussen P, Woo H, Masaryk T, Fiorella D. Endovascular Treatment of Wide-Necked Cerebral Aneurysms Using Double Neuroform Stents in Y-Configuration - Mid Term Angiographic Outcome. **American Society of Interventional Therapeutic Neuroradiology (ASITN)**, Dana Point, CA, July 2007
14. **Turner R**, Gonugunta V, Kelly M, Masaryk T, Fiorella D. Marginal Sinus AV Fistulae Mimicking Carotid-Cavernous Fistulae: Diagnostic and Therapeutic Considerations **Congress of Neurological Surgeons**. San Diego, CA. September, 2007
15. **Turner R**, Byrne J, Kelly M, Gonugunta V, Mitsos A, Masaryk T, Rasmussen P, Fiorella D. Delayed Visual Deficits and Monocular Blindness after Endovascular Treatment of Paraophthalmic Aneurysms. **Congress of Neurological Surgeons**. San Diego, CA. September, 2007
16. **Turner R**, Kelly M, Moskowitz S, Gonugunta V, Masaryk T, Fiorella D. Revascularization of Symptomatic Subacute Cerebrovascular Occlusions with a Self-Expanding Intracranial Stent System. **Society of NeuroInterventional Surgery (SNIS)**. Lake Tahoe, CA. July 28<sup>th</sup>, 2008
17. Kelly M, Gonugunta V, **Turner R**, Moskowitz S, Fiorella D. Delayed Migration of a Self-Expanding Intracranial Microstent. **Society of NeuroInterventional Surgery (SNIS)**. Lake Tahoe, CA. August 1<sup>st</sup>, 2008
18. Kelly M, Dodd R, **Turner R**, Marks M, Fiorella D. Improved Aneurysm Packing Density with the Enzo Microcatheter. **Society of NeuroInterventional Surgery (SNIS)**. Lake Tahoe, CA. August 1<sup>st</sup>, 2008
19. Kelly M, **Turner R**, Moskowitz S, Gonugunta V, Masaryk T, Fiorella D. Delayed Symptomatic Coil Migration after Initially Successful Balloon Assisted Aneurysm Coiling. **Society of NeuroInterventional Surgery (SNIS)**. Lake Tahoe, CA. August 1<sup>st</sup>, 2008
20. Hussain M, Kelly M, Moskowitz S, Furlan A, **Turner R**, Gonugunta V, Masaryk T, Fiorella D. Mechanical Thrombectomy for Acute Stroke with the Alligator Retrieval Device. **Society of NeuroInterventional Surgery (SNIS)**. Lake Tahoe, CA. August 1<sup>st</sup>, 2008
21. **Turner R**, Kelly M, Gonugunta V, Fiorella D. Packing Densities Using Balloon Remodeling Techniques and Rate of Aneurysm Occlusion. **European Society of Neuroradiology (ESNR)**. Krakow, Poland. September 22<sup>nd</sup>, 2008

22. **Turner R**, Kelly M, Gonugunta V, Fiorella D. Balloon Remodeling and Hydrogel-Coated Coils: Packing Densities and Occlusion Rates **European Society of Neuroradiology (ESNR)**. Krakow, Poland. September 22<sup>nd</sup>, 2008
23. **Turner R**, Kelly M, Gonugunta V, Fiorella D. Packing Densities and Occlusion Rates Using Balloon Remodeling Techniques. **ABC-WIN Seminar**, Val d'Isere, France. January 14, 2009
24. Turk A, **Turner R**, Chaudry MI, Croy B, Ligon D, Ross T. Evaluation of a New Self-Expanding Vessel Occlusion Device. **World Federation of Interventional Therapeutic Neuroradiology** Montreal Canada June 2009.
25. **Turner R**, Chaudry M, Turk A. Novel Endoluminal Neck Bridge Device for Coil Assistance. **Society of NeuroInterventional Surgery**, July 28<sup>th</sup>, 2010, Carlesbad, CA

### ***Invited Symposium/Grand Rounds/Lectures***

1. United States Wingspan Registry: Results at One Year. **6<sup>th</sup> Great Lakes Interventional Radiology Conference**. April 28<sup>th</sup>, 2007 Ypsilanti, Michigan.
2. United States Wingspan Registry: Results at One Year. **Medical University of Warsaw**, May 13<sup>th</sup> -15<sup>th</sup>, 2007, Warsaw, Poland
3. The Evolution of Neuroform Stent Assisted Aneurysm Treatment. **Medical University of Warsaw**, May 13<sup>th</sup> -15<sup>th</sup>, 2007, Warsaw, Poland
4. Anti-Thrombotic Strategies in Aneurysm Treatment. **Medical University of Warsaw**, May 13<sup>th</sup> -15<sup>th</sup>, 2007, Warsaw, Poland
5. ISAT and Its Effects on the 21<sup>st</sup> Century Cerebrovascular Neurosurgeon. **Cleveland Clinic Foundation**, July 25<sup>th</sup>, 2007
6. Neurovascular Anatomy. **10<sup>th</sup> Annual Innovations in Neuroscience Nursing Conference**. October 4<sup>th</sup>, 2007, Cleveland, OH.
7. Innovations in Endovascular Strategies – Past, Present, Future. **Medical University of South Carolina (MUSC)**, December 6<sup>th</sup>, 2007.
8. Transcollation Technology and its Implications on Complex Spine Surgery. *Keynote Speaker*, **Salient Surgical** July 16<sup>th</sup>, 2009, Tampa FL.
9. New Devices and Techniques in Balloon Assisted Coiling. **SIMI Meeting**, November 5<sup>th</sup>, 2009, Buenos Aires, Argentina
10. Cerebrovascular Case Presentation and Panel. **South Carolina Association of Neurological Surgeons**, November 7<sup>th</sup>, 2009, Charleston SC.
11. Balloons and Coils – Where We've Been, Where We're Going. *Keynote Speaker*, **Micrus Endovascular**, January 14<sup>th</sup>, 2010, Miramar FL.
12. The Stroke Neurosurgeon **Society of NeuroInterventional Surgery**, July 27<sup>th</sup>, 2010, Carlesbad, CA
13. Balloons and Coils – Where We Are Going **Society of NeuroInterventional Surgery**, July 29<sup>th</sup>, 2010, Carlesbad, CA

### ***Publications***

1. **Turner R**, Chahlavi A, Rasmussen P, Brody F: Laparoscopic Revision of a Ventriculoperitoneal Shunt: Case Report and Review of the Literature. *Journal of Laparoendoscopic and Advanced Surgical Techniques*. 14(5):310-312, 2004.
2. **Turner R**, Rosenblatt S, Chand B, Luciano M: Laparoscopic Peritoneal Catheter Placement: Results of a New Method in 111 Patients. *Neurosurgery* 61(3)/ONS Suppl 1: 167-174, 2007
3. **Turner R**, Gonugunta V, Kelly M, Masaryk T, Fiorella D. Marginal Sinus Fistula Mimicking Carotid Cavernous Fistula. *AJNR Am J Neuroradiol* 28:1915-1918, 2007
4. Kelly M, **Turner R**, Gonugunta V, Woo H, Rasmussen P, Masaryk T, Fiorella D. Stent Reconstruction of Wide Necked Aneurysms Across the Circle of Willis. *Neurosurgery* 61(5)/ONS Suppl (2): ONS249-255, 2007
5. **Turner R**, Obuchowski N, Gonugunta V, Kelly M, Woo H, Fiorella D. Assessing the Importance of an Observed "Zero Occurrence" in a Small Sample Size Letter to the Editor. *Neurosurgery* 61(6):E1340, 2007
6. Nfonam V, Chand B, Rosenblatt S, **Turner R**, Luciano M: Laparoscopic Management of Distal Ventriculoperitoneal (VP) Shunt Complications. *Surgical Endoscopy* 22:1866-1870, 2008
7. Kelly M, **Turner R**, Gonugunta V, Rasmussen PA, Woo HW, Fiorella D. Monorail Snare Technique for the

- Retrieval of an Adherent Microcatheter from an Onyx Cast. Neurosurgery 63(1)/ONS 1-4, 2008
8. **Turner R**, Kelly M, Lylyk P, Fiorella D: Embolization Procedures for Neurovascular Aneurysms. Endovascular Today, June 2008
  9. **Turner R**, Kelly M, Gonugunta V, Rasmussen P, Fiorella D. Delayed Visual Deficits and Monocular Blindness After Endovascular Treatment of Paraophthalmic Aneurysms. Neurosurgery 63:469-475, 2008
  10. Gonugunta V, Kelly M, Woo H, **Turner R**, Fiorella D. Double Balloon Trapping Technique for the Embolization of a Large, Wide-Necked Basilar Trunk Aneurysm Incorporating the Superior Cerebellar Artery – a case report. Neurosurgery 63 (4 suppl 2):291-291, 2008
  11. Fiorella D, **Turner R**. Embolc Agents/ Materials, Stents, Delivery Systems and Retrieval Devices Endovascular Techniques in the Management of Cerebrovascular Disease. Informa Healthcare, September 2008
  12. Masaryk T, **Turner R**. Cerebrovascular Sinus Occlusive Disease. Endovascular Techniques in the Management of Cerebrovascular Disease. Informa Healthcare, September 2008
  13. Gonugunta V, **Turner R**, Fiorella D, Schlenk R, Weil R. IA Nicardipine for Post-Traumatic Vasospasm. International J of Med. *In Press*
  14. Kelly ME, **Turner R**, Moskowitz SI, Gonugunta V, Hussain MS, Fiorella D. Delayed Migration of a Self Expanding Intracranial Microstent. AJNR Am J Neuroradiol 29: 1959-1960, 2008
  15. Kelly M, **Turner R**, Moskowitz S, Gonugunta V, Rasmussen P, Masaryk T, Fiorella D. Revascularization of a Symptomatic Subacute Cerebrovascular Occlusion with a Self-Expanding Intracranial Stent System. Neurosurgery 64:72-72, 2009.
  16. Hussain MS, Kelly ME, Moskowitz SI, Furlan AJ, **Turner RD**, Gonugunta VR, Rasmussen PA, Masaryk TJ, Fiorella DJ. Mechanical Thrombectomy for Acute Stroke with the Alligator Retrieval Device. Stroke 40: 2784-2788, 2009.
  17. **Turner R**, Chaudry MI, Turk AS. Spinal Vascular Anatomy. Handbook of Endovascular Neurosurgery. Thieme, *In Press*
  18. **Turner R**, Chaudry MI, Chimowitz I, Turk AS. Intracranial Atherosclerotic Disease. Handbook of Endovascular Neurosurgery. Thieme, *In Press*
  19. Chaudry M, Feng W, Holmstedt C, **Turner R**, Adams R, Turk A. Delayed Basilar Artery Recanalization 100 hours After Symptom Onset. J NeuroInterven Surg. *In Press*
  20. **Turner RD**, Turk AS, Chaudry MI, Patel SJ, Ellegala DB, Fiorella DJ. Emergent Reconstruction of an Unstable Iatrogenic Intracranial Carotid Artery Pseudo-Aneurysm with the Pipeline Embolization Device. Neurosurgery. *Submitted*
  21. Turk AS, **Turner RD**, Chaudry MI. Evaluation of the Nfocus LUNA™, a new parent vessel occlusion device: A comparative study in a canine model. **Neurosurgery** : *Submitted*
  22. Chaudry MI, Feng W, Holmstedt C, **Turner RD**, Adams R, Turk AS. Delayed Basilar Artery Recanalization at 100 hours. **J of NeuroInterven Surg** *Accepted*
  23. **Turner RD**, Chaudry MI, Turk AS. Novel Non-Occlusive Temporary Endoluminal Neck Protection Device to Assist in the Treatment of Wide-Necked Aneurysms in a Canine Model. **J Neurosurg** *Submitted*

## ***Ad hoc Reviewer***

Clinical Neurology and Neurosurgery  
 Journal of Emergencies, Trauma, and Shock  
 Neurosurgery  
 Journal of NeuroInterventional Surgery  
 Stroke

## ***Research***

1. Humanitarian Device Exemption (HDE) Neuroform Microdelivery Stent for the Treatment of Wide Necked Intracranial Aneurysms. IRB# 5278 PI: Peter Rasmussen
2. Minimally Invasive Ventriculoperitoneal Shunt (MIVS) Registry; IRB# 6544 PI: Raymond Turner MD
3. MIVS Retrospective Chart Review and Registry Completion; IRB# 7413 PI: Raymond Turner MD
4. Hydrocoil: Endovascular Aneurysm Occlusion Packing Study (HELPS). IRB# 7818 PI: David Fiorella MD
5. Role of Angiotensin II in SAH-induced Cerebral Vasospasm, IRB# 7970 PI: Raymond Turner MD
6. The Wingspan Stent System and Gateway PTA Balloon Catheter, a Humanitarian Use Device. IRB# 05-064 PI: David Fiorella MD
7. Chart Review: Assessment of the Wingspan Stent System with Gateway PTA Balloon Catheter. IRB# 06-110 PI: David Fiorella MD

8. Evaluation of the Penumbra Stroke System in the Revascularization of Patients with Acute Ischemic Stroke Secondary to Intracranial Large Vessel Occlusive Disease. IRB#06-587 PI: Peter Rasmussen
9. A Prospective, Randomized, Multicenter Trial Investigating Matrix and GDC Coils for the Treatment of Intracranial Saccular Aneurysms: Matrix and Platinum Science (M.A.P.S.)Trial IRB# 07-151 PI: David Fiorella MD
10. A Phase I Study to Evaluate the Safety of Wingspan Stent-Assisted Recanalization for Acute Intracranial Occlusion. IRB# 07-208 PI: David Fiorella MD
11. Humanitarian Use Device: CORDIS ENTERPRISE Vascular Reconstruction Device and Delivery System. IRB# 07-442 PI: David Fiorella MD
12. Onyx Liquid Embolic System: Onyx HD-500:Humanitarian Use Device with Human Device Exemption. IRB# 07-531 PI: Peter Rasmussen MD
13. Patients Prone to Recurrence after Endovascular Treatment: A Randomized Trial Comparing Platinum and Hydrogel-coated coils. IRB# 08-005 PI: Raymond Turner MD and David Fiorella MD
14. Ventricular Enlargement Study PI: Raymond Turner MD, Leo de la Costa (Toronto Western Univ)
15. Chart Review: Ventricular Enlargement after Endovascular Coiling of Unruptured Intracerebral Aneurysms. IRB: 08-103 PI: Raymond Turner MD
16. Stenting and Aggressive Medical Management for Preventing Recurrent Stroke in Intracranial Stenosis (SAMMPRIS) IRB: to be assigned, PI: David Fiorella
17. Packing Density in Smaller Aneurysms: How Significant: Steering Committee Chair
18. Conscious III, PI: Raymond Turner

1. Neurostent System and Aneurysm Embolization *in vivo* Chronic Study; ARC# 07704 PI: Henry Woo MD
2. Physician Training Program: Microvention™ Hydrocoil; ARC # 07438 PI: Peter Rasmussen MD
3. Optical Coherence Tomography of Saccular Aneurysm Healing Response after Endovascular Treatment; ARC #07400 PI: Thomas Masaryk MD
4. IACUC Proposal: In Vivo Assessment of Aneurysm Healing with OCT After Coil Embolization: Comparison of Hydrocoil, Matrix, and Bare Platinum in Dog Bifurcation and Sidewall Aneurysm Models. PI: Thomas Masaryk MD
5. IACUC Proposal: In Vivo Assessment of Aneurysm Healing with Optical Coherence Tomography (OCT) and Magnetic Resonance Imaging (MRI) after Embolization with Calcium Alginate in Canine Bifurcation and Sidewall Aneurysm Models. PI: Henry Woo MD
6. Assessment of the Efficacy of a High Metal Surface Area Stent for the Treatment of Carotid Sidewall Aneurysms; ARC #07973 PI: David Fiorella MD
7. IACUC Proposal: Hepacoat stent-assisted aneurysm embolization: Impact of heparin coating on thrombus formation and organization in canine side wall aneurysms. PI: David Fiorella MD
8. Intra-arterial delivery of recombinant adeno-associated viral vectors into the pig spinal cord through the anterior spinal artery (ASA) infusion. ARC#08163 PI: Nicholas Boulis MD
9. IACUC Proposal: In Vivo Assessment of Aneurysm Healing After Embolization: Comparison of Hydrocoil, Matrix, Cerecyte, Morpheus, and Bare Platinum with and without Stent Assistance in Dog Sidewall Aneurysm Models. PI: David Fiorella MD
10. IACUC Proposal: In Vivo Assessment of Aneurysm Healing with Three Dimensional OCT After Coil Embolization: Comparison of Hydrocoil, Cerecyte, and Bare Platinum in Dog Sidewall Aneurysm Models. PI: Thomas Masaryk MD
11. Physician Training Protocol – Aneurysms. PI: Raymond Turner MD
12. Physician Training Protocol – AVMs. PI: Raymond Turner MD
13. Implantation of Embolic Devices in the Ventricular Space of Canines – Microvention-Terumo. PI: Raymond Turner MD
14. Evaluation of novel endovascular aneurysm devices in a canine aneurysm model – Nfocus NeuroMedical PI: Aquilla Turk DO.
15. Evaluation of novel endovascular aneurysm devices in a canine aneurysm model – Mindframe Inc. PI: Aquilla Turk DO.
16. Physician Trainint Protocol for Aneurysms IACUC #2773 PI: Raymond Turner MD
17. Evaluation of Histological Response to Hydrogel-Coated Coils IACUC #2774 PI: Raymond Turner MD
18. Physician Training Protocol for AVMs IACUC #2775 PI: Raymond Turner MD
19. Evaluation of IRIIS Opticell and Opticell Plus Stroke Devices. PI: Raymond Turner

20. Evaluation of Novel Coated Neuropath Catheter. PI: Raymond Turner MD
21. Evaluation of Novel Microwire. PI: Raymond Turner MD
22. Evaluation of Novel Endoluminal Device. PI: Raymond Turner MD

## ***Grants***

1. Role of Angiotensin II in SAH-induced Cerebral Vasospasm. IRB# 7970 Lerner Research Institute of Cleveland Clinic Foundation RPC Grant. PI: Raymond Turner 2005-2008, \$21,945
2. Unrestricted Education Grant. Microvention-Terumo. 2007-2008, \$100,000
3. Research Grant – Mindframe, 2010 - \$40,000
4. Research Grant – Mindframe, 2010 - \$25,000
5. Research Grant – Micrus, 2010 - \$25,000
6. Research Grant – Salient Surgical, 2010 - \$15,000

## ***Investigational Device Development and Patents***

1. Minimally Invasive Ventricular Peritoneal Shunt Surgical Technique, IDF#05029
2. Optical Shunt Passer, IDF#06132

## ***Courses***

1. Mentor in Violence Prevention Program – Northwestern Univ Center for the Study of Sport and Society, 1996
2. Midas Rex Course – Cleveland Clinic Foundation, 2004
3. Kyphon, Inc. Kyphoplasty Course – Cleveland Clinic Foundation, 2004
4. Research Update in Neuroscience for Neurosurgeons (RUNN) – Marine Biological Laboratories, Woods Hole, MA, 2004
5. Neuro-Endoscopic Surgical Techniques Course – Cleveland Clinic Foundation, 2005 – Faculty
6. Epilepsy Course – Cleveland Clinic Foundation, 2005, 2006
7. Gamma Knife 5-Day Course – Cleveland Clinic Foundation, 2006
8. Concentric Medical Users Meetings, San Francisco, CA, 2007
9. Aesculap Resident and Fellow Course, Tuttlingen, Germany, 2007
10. Comprehensive Surgical Neuroangiography Course, Durham NH, 2007
11. 10<sup>th</sup> Annual Innovations in Neuroscience Nursing Conference, Cleveland OH, 2007 – Faculty
12. Brainlab Resident Course, Munich Germany, 2008
13. Microvention Fellows Course, Aliso Viejo CA, 2008
14. Micrus Fellows Course, Worcester, MA, 2008
15. Depuy Spine MIS T-LIF Course, Las Vegas, NV, 2009
16. Boston Scientific Fellows Course, Charleston SC, 2009 – Faculty
17. Salient Surgical PLIF Course, Indianapolis, IN, 2009 – Faculty
18. Micrus Ascent Balloon Course, Buenos Aires, Argentine, 2009 – Faculty
19. AANS Cerebrovascular Section Hand's On Endovascular Course, San Antonio, TX, 2010 – Faculty
20. Boston Scientific Fellows Course, Charleston SC, 2010 – Faculty
21. Micrus Fellows Course, Charleston SC, 2010 – Faculty

## ***Local Professional Committees***

1. Institutional Review Board – Cleveland Clinic Foundation 2006
2. Neuroscience Institute Hospital Operations Committee – Cleveland Clinic Foundation 2007
3. Neuroscience Institute Leadership Board – Cleveland Clinic Foundation 2007
4. Neuroscience Institute Resident Duty Hour Task Force – Cleveland Clinic Foundation 2007
5. MUSC Faculty Senate 2008
6. MUSC Neuroscience Grand Rounds Committee

## ***Other Professional Activities***

1. **Consultant, Speaker's Bureau** – Microvention Terumo, 2006 - Present
2. **Consultant, Scientific Advisory Board** – Mindframe Inc, 2008 – Present
3. **Consultant, Speaker's Bureau** – Micrus Endovascular, 2009 – Present
4. **Consultant, Speaker's Bureau** – Salient Surgical, 2009 – Present

5. **Consultant, Speaker's Bureau** – Penumbra Inc, 2010 – Present

### ***Honors***

1. Sacred Heart University Athletic Scholarship – Baseball. 1994 – 1998
2. President Scholarship - *Karol Marcinkowski University of Medical Sciences*, Monetary award recognizing outstanding academic performance during the second year. 1999-2000
3. Wanda Blenska Scholarship - *Karol Marcinkowski University of Medical Sciences*, A monetary award recognizing outstanding academic performance during the third year. Only awarded to the top 4 students in the school. 2000-2001
4. 2005 Innovator Award – *The Cleveland Clinic Foundation* June 2005. In recognition for the role in the development of the Minimally Invasive Ventriculoperitoneal Shunt Surgical Technique.