

Signature

**SANDRA NARAYANAN (néé Nathan), MD, FAHA, FANA, FSVIN**  
Clinician Educator Track

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**EDUCATION**

MD 1997 - 2001  
University of Miami, School of Medicine, Miami, Florida

BS, Biology, *cum laude* 1995 - 1997  
Six-Year Honors Program in Medicine  
University of Miami, Coral Gables, Florida

Valedictorian 1995  
Hernando High School, Brooksville, Florida

**POSTGRADUATE TRAINING**

Fellow, Interventional Neuroradiology 2007 - 2009  
Emory University Hospital, Atlanta, Georgia

Fellow, Diagnostic Neuroradiology 2006 - 2007  
Emory University Hospital, Atlanta, Georgia

Fellow, Vascular Neurology 2005 - 2006  
Massachusetts General Hospital, Boston, Massachusetts

Resident, Neurology 2002 - 2005  
University of Miami / Jackson Memorial Hospital, Miami, Florida

Intern, Internal Medicine 2001 - 2002  
University of Miami / Jackson Memorial Hospital, Miami, Florida

**FACULTY APPOINTMENTS**

Associate Professor, Neurosurgery and Neurology 2015 - Present  
Wayne State University, Detroit, Michigan

Assistant Professor, Neurosurgery and Neurology 2009 - 2015  
Wayne State University, Detroit, Michigan

Senior Associate, Radiology 2007 - 2009  
Emory University Hospital, Atlanta, Georgia

**HOSPITAL OR OTHER PROFESSIONAL APPOINTMENTS**

Active Staff Beaumont Hospital-Wayne, Wayne, Michigan	2014 - Present
Active Staff McLaren Macomb Hospital, Mt. Clemens, Michigan	2013 - Present
Active Staff Beaumont Hospital-Taylor, Taylor, Michigan	2013 - Present
Active Staff Beaumont Hospital-Trenton, Trenton, Michigan	2013 - Present
Director, Neuroendovascular Program Beaumont Hospitals-Dearborn/Taylor/Wayne/Trenton	2013 - Present
Active Staff Children's Hospital of Michigan, Detroit, Michigan	2012 - Present
Active Staff Beaumont Hospital-Dearborn, Dearborn, Michigan	2012 - Present
Director, Neuroendovascular Program Detroit Medical Center, Detroit, Michigan	2012 - Present
Provisional Active Staff St. John Providence Health System, Southfield, Michigan	2010 - Present
Active Staff St. John Macomb Hospital, Macomb Township, Michigan	2010 - Present
Staff Privileges, Neurology Karmanos Cancer Institute, Detroit, Michigan	2009 - Present
Active Staff St. Joseph Mercy Oakland Hospital, Pontiac, Michigan	2009 - Present
Active Staff Detroit Medical Center, Detroit, Michigan	2009 - Present

**MAJOR PROFESSIONAL SOCIETIES**

World Federation of Interventional and Therapeutic Neuroradiology	2017 - Present
American Neurological Association	2017 - Present
Michigan Association of Physicians of Indian origin	2012 - Present
<i>Lifetime Member</i>	2012 - Present
Michigan State Medical Society	2012 - Present
Wayne County Medical Society	2012 - Present
Oakland County Medical Society	2012 - Present
American Medical Association	2009 - Present

**MAJOR PROFESSIONAL SOCIETIES (Continued)**

Michigan Neurological Association	2009 - Present
Society of NeuroInterventional Surgery	2009 - Present
<i>Senior Member</i>	2011 - Present
Society of Vascular and Interventional Neurology	2008 - Present
<i>Active Member</i>	2011 - Present
Association of Indian Neurologists in America (AINA)	2006 - Present
<i>Lifetime Member</i>	2012 - Present
American Society of Neuroradiology	2006 - Present
American Heart Association/American Stroke Association	2005 - Present
<i>Professional Member</i>	2009 - Present
<i>Member, Stroke Council</i>	2006 - Present
American Society of Neuroimaging	2004 - Present
American Academy of Neurology (AAN)	2000 - Present
<i>Neuroimaging section, AAN</i>	2006 - Present
<i>Stroke section, AAN</i>	2005 - Present
<i>Endovascular and Interventional Neurology section, AAN</i>	2005 - Present
American Association of Physicians from India	1997 - Present
<i>Patron/Lifetime member</i>	2011 - Present
Association of Kerala Medical Graduates	1997 - Present
<i>Lifetime member</i>	2011 - Present

**MEDICAL LICENSURE**

Full Medical License, California (#C55499)	Issued 09/14/2012 Exp. 09/30/2018
Full Medical License, Illinois (#036129734)	Issued 03/06/2012 Exp. 07/31/2017
Full Medical License, Michigan (#4301094071)	Issued 05/05/2009 Exp. 01/31/2019
Full Medical License, Georgia (#057732)	Issued 04/07/2006 Exp. 09/30/2013
Full Medical License, Massachusetts (#224657)	Issued 05/04/2005 Exp. 09/03/2007
NPI: 1235101510	

**CERTIFICATION**

Re-certification, Neurology	Effective 10/31/2016
American Board of Psychiatry & Neurology	Exp. 12/31/2026
Certification, Supervisor and Operator Fluoroscopy, California	2013
Diplomate, Neuroimaging, United Council of Neurologic Subspecialties	2013
Diplomate, Certificate # 566, Vascular Neurology	Effective 4/28/2008
American Board of Psychiatry & Neurology	Exp. 12/31/2018

**CERTIFICATION (Continued)**

Diplomate, Certificate # 53695, Neurology American Board of Psychiatry & Neurology	Effective 5/14/2006 Exp. 12/31/2016
Pediatric Advanced Life Support (PALS) certification Advanced Cardiovascular Life Support (ACLS) certification	Current Current
Basic Life Support (BLS) certification	Current

**HONORS AND AWARDS**

Fellow of the Society of Vascular and Interventional Neurology (FSVIN)	2017
Fellow of American Neurological Association (FANA)	2017
Nominee, Gold Humanism Honor Society Wayne State University School of Medicine	2015
Fellow of American Heart Association (FAHA)	2014
CEO Team BRAVO! Award Primary Stroke Center and Door-to-Needle Teams, <i>member</i> Beaumont Hospital-Dearborn	2013
Leading Physicians of the World International Association of Healthcare Professionals	2012
Powerful Women of Purpose in Technology Award Rhonda Walker Foundation	2011
“Most Outstanding Research” Award University of Miami / Jackson Memorial Hospital	2005
Nominated for Florida “Resident of the Year” University of Miami / Jackson Memorial Hospital	2005

**SERVICE**

**Wayne State University**

**Departmental/Divisional**

Member, Department of Neurosurgery Selective Salary Committee Wayne State University School of Medicine, Detroit, Michigan	2017
Member, Peer Review Committee, Department of Neurosurgery Wayne State University School of Medicine, Detroit, Michigan	2016 - Present
Member, Department of Neurosurgery Compensation Committee Wayne State University School of Medicine, Detroit, Michigan	2012 - 2013

**SERVICE (Continued)**

**Wayne State University (Continued)**

**Departmental/Divisional (Continued)**

Member, ACGME Clinical Competency Committee, Department of Neurosurgery 2009 - Present

Member, Department of Neurosurgery Resident Selection Committee  
Wayne State University School of Medicine, Detroit, Michigan 2009 - Present

**School of Medicine**

Judge, 21<sup>st</sup> Annual Graduate Student Research Day 2017  
Wayne State University School of Medicine, Detroit, Michigan

Participant, "Walk with a Doc" M1/M2 Health and Wellness Program 2017  
Wayne State University School of Medicine, Detroit, Michigan

Judge, Poster Presentations, Medical Student Research Symposium 2016 - 2017  
Wayne State University School of Medicine, Detroit, Michigan

**Affiliate Medical Organizations**

Judge, 6<sup>th</sup> Annual Graduate Medical Education Quality Education and Safe System Training (QuESST) Resident Research Day Poster Competition 2017  
Detroit Medical Center, Detroit, Michigan

Judge, 5<sup>th</sup> Annual Graduate Medical Education QuESST Resident Research Day Poster Competition 2016  
Detroit Medical Center, Detroit, Michigan

Member, COO search committee 2015  
Harper-Hutzel Hospital, Detroit, Michigan

Member, Endovascular Board 2013 - Present  
Beaumont Hospital-Dearborn, Dearborn, Michigan

Co-Chair, Physician Leadership Council 2012 - Present  
Harper University Hospital, Detroit, Michigan

Member, Stroke and Neurointerventional Operational Teams 2012 - Present  
Beaumont Hospital-Dearborn, Dearborn, Michigan

Member, Stroke Team One Steering Committee 2009 - Present  
Detroit Medical Center, Detroit, Michigan

**Professional**

International Stroke Conference 2018  
Moderator, Aneurysm Symposium: Unruptured aneurysms: Novel insights and treatment concepts

**SERVICE (Continued)**

**Professional (Continued)**

International Stroke Conference Member, Fellows in Training Workshop Program Committee	2017 - 2018
Society of Vascular and Interventional Neurology (SVIN) Member-At-Large, Board of Directors	2017 - 2020
Society of NeuroInterventional Surgery (SNIS) Member, Women in Neurointervention Taskforce	2017 - 2018
SVIN 10 <sup>th</sup> Annual Meeting Member, Women in Vascular and Interventional Neurology inaugural committee	2017
SVIN 10 <sup>th</sup> Annual Meeting Moderator, Brain AVM/AVF session	2017
SNIS 14 <sup>th</sup> Annual Meeting Abstract Grader	2017
International Stroke Conference Moderator: Neurointervention, Fellow and Early Career Stroke Leader Round Table Luncheon Symposium	2017
SNIS Member, Board of Directors	2016 - Present
SNIS Foundation Chair	2016 - Present
SNIS 13 <sup>th</sup> Annual Meeting Member, Planning Committee	2015 - 2016
SNIS 12 <sup>th</sup> Annual Meeting Member, Planning Committee	2014 - 2015
SNIS Foundation Member, Board of Directors	2014 - Present
SNIS 11 <sup>th</sup> Annual Meeting Moderator, FDA Perspectives on the Neurointerventional Space	2014
SNIS 11 <sup>th</sup> Annual Meeting Abstract Grader	2014

**SERVICE (Continued)**

**Professional (Continued)**

International Stroke Conference Moderator, Acute Endovascular Treatment Invited Symposium: Ultrafast door to recanalization time using endovascular therapy: how do we change practice?	2014
SNIS 11 <sup>th</sup> Annual Meeting Member, Planning Committee	2013 - 2014
American Stroke Association Member, Statement Oversight Committee, Stroke Council	2013 - 2017
Association of Indian Neurologists in America Member, Executive Committee	2013 - 2017
American Academy of Neurology Councilor, Endovascular and Interventional Neurology Section	2012 - 2013
SVIN 5 <sup>th</sup> Annual Meeting Abstract Grader	2012
SVIN 5 <sup>th</sup> Annual Meeting Moderator, Session 4 (ICAD Abstracts) and Session 7 (Ischemia Lectures)	2012
Oakland County Medical Society Member, Board of Directors	2012 - 2017
Association of Kerala Medical Graduates Member, Board of Governors	2012 - 2015
Association of Indian Neurologists in America Reviewer, AINA Trainee Award Committee	2017
American Society of Neuroimaging Member, Qureshi Award Committee	2012 - 2013
Member, Michigan Endovascular Research Group	2012 - Present
American Stroke Association Member, Stroke Early Career – Cerebrovascular Development Committee	2012 - Present
International Stroke Conference Abstract Grader	2011 - 2013
SVIN 4 <sup>th</sup> Annual Meeting Member, Planning Committee	2011

**SERVICE (Continued)**

**Professional (Continued)**

Association of Kerala Medical Graduates 33 <sup>rd</sup> Annual Convention Member, Continuing Medical Education and Fundraising Committees	2011 – 2012
American Academy of Neurology 63 <sup>rd</sup> Annual Meeting Moderator, Interventional Neurology Oral Abstracts	2011
St. Joseph Mercy Oakland Hospital, Pontiac, Michigan Ad hoc member, Pharmacy & Therapeutics Committee	2010 - 2015
SVIN Chair, Membership Taskforce	2010 - 2013
SNIS Member, Standards and Guidelines Committee	2009 - 2015

**Community**

Community Engagement: Informal presentation on signs/symptoms of stroke and stroke treatments at Greenhouse Apartments (senior living facility), Detroit, Michigan	8/11/2017
Hill Day 2017 Capitol Hill Advocacy for Get Ahead of Stroke legislative campaign with Society of NeuroInterventional Surgery	6/7/2017
Community Engagement: Stroke Awareness Month presentations, education, and stroke risk factor screening at Central Baptist Church services, Detroit, Michigan	5/21/2017
Stroke with Dr. Sandra Narayanan: What is a stroke? Video for Stroke Awareness Month, Sinai-Grace Hospital	4/11/2017
Stroke with Dr. Sandra Narayanan: Remember F.A.S.T. for signs of stroke Video for Stroke Awareness Month, Sinai-Grace Hospital	4/11/2017
Stroke with Dr. Sandra Narayanan: What are symptoms of stroke? Video for Stroke Awareness Month, Sinai-Grace Hospital	4/11/2017
Stroke with Dr. Sandra Narayanan: What to do when you see signs of stroke? Video for Stroke Awareness Month, Sinai-Grace Hospital	4/11/2017
Stroke with Dr. Sandra Narayanan: How can you reduce your risk of stroke? Video for Stroke Awareness Month, Sinai-Grace Hospital	4/11/2017
Stroke with Dr. Sandra Narayanan: How is a stroke treated? Video for Stroke Awareness Month, Sinai-Grace Hospital	4/11/2017

**SERVICE (Continued)**



**Community (Continued)**

Detroit News interview: "Checking Gordie's stroke remedy" Newspaper article	6/24/2016
Radio interview re: Acute Ischemic Stroke Intervention, <i>Champions of Care</i> News/Talk 760 WJR, Detroit, Michigan	4/11/2016
Established Detroit Brain Aneurysm Support Group with The Joe Niekro Foundation	3/16/2015
Radio interview re: Stroke, Oakwood's <i>Champions of Care</i> News/Talk 760 WJR, Detroit, Michigan	12/21/2014
Video interview re: Neurointerventional Program Beaumont Hospital-Dearborn	6/27/2014
Twitter chat, National Stroke Association's Stroke Month Wayne State University Physician Group	5/28/2014
Radio interview re: TIA, Oakwood's <i>Champions of Care</i> News/Talk 760 WJR, Detroit, Michigan	5/25/2014
TV interview: Women and Stroke Detroit Wants to Know: Women's Health	4/2/2014
Radio interview re: TIA, Oakwood's <i>Champions of Care</i> News/Talk 760 WJR, Detroit, Michigan	2/2/2014
Michigan Prime interview re: Brain fitness Newspaper article	12/13/2013
Radio interview re: TIA, Oakwood's <i>Champions of Care</i> News/Talk 760 WJR, Detroit, Michigan	12/8/2013
Featured in "DMC Institutes New Protocol to Reduce Door-to-Needle Time For Stroke Treatment" DMC Advantage newsletter	Fall 2015
Radio interview re: Stroke, Oakwood's <i>Champions of Care</i> News/Talk 760 WJR, Detroit, Michigan	9/10/2013
Radio interview re: Neurointerventional Program, Oakwood's <i>Champions of</i> <i>Care</i> News/Talk 760 WJR, Detroit, Michigan	3/31/2013
Coalition of Labor Union Women (CLUW) monthly meeting: Stroke Awareness	6/11/2012

**SERVICE (Continued)**

**Community (Continued)**

Featured in "Defusing Brain Aneurysms: Interventional Neurologists Offer Solutions"	Spring 2012
DMC Receiving Advantage newsletter	
TV interview, Peter's Principles Channel 7 WXYZ, Detroit, Michigan	7/16/2010
DMC Patient Seminar, Are You Stroke Smart? Southfield Public Library, Southfield, Michigan	5/1/2010

**Scholarly Service**

**Grant Review Committees**

National/International

Society of NeuroInterventional Surgery Foundation  
Grant Reviewer, Joe Niekro Foundation Fellow Grant (*full member*) 2015 - 2018

Society of NeuroInterventional Surgery Foundation  
Grant Reviewer (*full member*) 2014 - Present

Society of Vascular and Interventional Neurology 7<sup>th</sup> Annual Meeting  
Fellows' Travel Grant Reviewer (*full member*) 2014

**Service for Peer-Reviewed Journals**

Editorial Board Membership

Associate Editor/Member of Editorial Board, *Frontiers in Endovascular and Interventional Neurology* 2017

International Advisory Board, *Journal of Cerebrovascular Sciences* 2015

Review Editor, *Frontiers in Endovascular and Interventional Neurology* 2010 - 2017

Editorial Board, *Journal of Stroke and Cerebrovascular Diseases* 2010 - Present

Review of Manuscripts

Ad hoc reviewer, *PLOS One* 2016 - Present

Ad hoc reviewer, *Interventional Neurology* 2015 - Present

Ad hoc reviewer, *BMJ Open* 2014

Ad hoc reviewer, *Clinical Schizophrenia & Related Psychoses* 2012

Ad hoc reviewer, *Journal of Neurointerventional Surgery* 2011 - Present

Ad hoc reviewer, *Journal of the Neurological Sciences* 2011

Ad hoc reviewer, *Journal of Neuroimaging* 2011 - 2014

Ad hoc reviewer, *The Neurologist* 2010

Ad hoc reviewer, *The Neurologist* 2010

Ad hoc reviewer, *Journal of Stroke and Cerebrovascular Diseases* 2008 - Present

Ad hoc reviewer, *Neurosurgery* 2008 - 2013

Ad hoc reviewer, *Stroke* 2008 - 2011

## TEACHING

### ***Fellows Mentored***

Maziar Seyedian, MD Vascular Neurology Fellow, Department of Neurology Detroit Medical Center/Wayne State University	2017 - 2018
Sharon Cooperman, MD Vascular Neurologist New Mexico	2017
Sushrut Dharmadhikari, MD Vascular & Interventional Neurologist Baptist Health Neurosurgery Arkansas Little Rock, Arkansas	2015
Vikram Jadhav, MD, PhD Interventional Neurology Fellow, University of Minnesota St. Paul, Minnesota	2015
Shamaelah Javed, MD Neurocritical Care Attending/Interventional Neurology Fellow, SUNY Upstate Johnson City, New York	2015
Brijesh Mehta, MD Vascular & Interventional Neurologist & Neurointensivist Memorial Health System Ft. Lauderdale, Florida	2012 - 2014
Dhanya Anand, MD Interventional Radiology Fellow, University of North Carolina Chapel Hill, North Carolina	2012 - 2013
Neelesh Nundkumar, MD Endovascular/Cerebrovascular Neurosurgeon Carolina Neurosurgery & Spine Associates Greensboro, North Carolina	2011 - 2013
Peter Adamczyk, MD Vascular and Interventional Neurologist, Sutter Health Castro Valley, California	2011 - 2015
Aniel Q. Majjhoo, MD Vascular and Interventional Neurologist, McLaren Health Care Flint, Michigan	2010 - 2012
Meziane Guerch, MD Vascular Neurologist	2010 - 2011

**TEACHING (Continued)**

***Fellows Mentored (Continued)***

Abhishek, MD Vascular and Interventional Neurologist, St. Joseph Mercy Oakland Pontiac, Michigan	2010 - 2016
Bharath Naravetla, MD Vascular and Interventional Neurologist/Neurointensivist McLaren Health Care Flint, Michigan	2009 - 2012
Mahmoud Rayes, MD Vascular and Interventional Neurologist/Neurointensivist UMG Neuroscience Associates Greenville, South Carolina	2009 - 2015
Ambooj Tiwari, MD Vascular & Interventional Neurologist, Interventional Neuro Associates Brooklyn, New York	2009 - 2014
Paritosh Pandey, MD Consultant Neurosurgeon, Manipal Hospital Bangalore, Karnataka, India	2009
Samuel Tsappidi, MD Vascular & Interventional Neurologist & Neurointensivist Assistant Professor, Depts. of Neurosurgery and Neurology Medical College of Georgia, Augusta, Georgia	2008 - 2013
Sung Bae Lee, MD, MBA Vascular & Interventional Neurologist & Neurointensivist Medical Director of Neurointerventional Surgery, The Queen's Medical Center Honolulu, Hawaii	2008 - 2009
Scott Rahimi, MD Endovascular and Cerebrovascular Neurosurgeon Associate Professor, Dept. of Neurosurgery, Medical College of Georgia Augusta, Georgia	2008 - 2009
<b><i>Residents/Mid-Level Providers Mentored</i></b>	2017
David Rosenbaum, MD, PGY-3 Department of Neurology, University of Texas-Houston/Memorial Hermann Hospital Houston, Texas	
Jon Rosenberg, MD, PGY-3 Department of Neurology, University of Pennsylvania Medical Center Philadelphia, Pennsylvania	2017

**TEACHING (Continued)**

**Residents/Mid-Level Providers Mentored**

Lauren Ottenhoff, DO, PGY-3 Department of Neurology, Loyola University Medical College Chicago, Illinois	2017
Joshua Loya, MD, PGY-3 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2017 – Present
Dylan Goodrich, MD, PGY-1 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2017 – Present
Neil Klinger, MD, PGY-1 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2017 – Present
Whitfield Lewis, MD, PGY-2 Department of Neurology, Detroit Medical Center	2016 - Present
Casey Kolp, PA-C Saint Clair Shores Prompt Care PLLC St. Clair Shores, Michigan	2016 – 2017
Aaron Desai, MD, PGY-2 Department of Neurology, Detroit Medical Center/Wayne State University	2016
Shitiz Sriwastava, MD, PGY-2 Department of Neurology, Detroit Medical Center/Wayne State University	2016
Jay Kinariwala, MD, PGY-2 Department of Neurology, Detroit Medical Center/Wayne State University	2016 - Present
Hamidreza Saber, MD, MPH, PGY-3 Department of Neurology, Detroit Medical Center/Wayne State University	2016 - Present
Manan Shah, MD, PGY-2 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2016 - Present
Kate Peterson, MD, PGY-2 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2016 - Present
Bryan Lieber, MD, PGY-3 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2016 - Present
Clay Elswick, MD, PGY-7 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2016 - 2018

**TEACHING (Continued)**

**Residents/Mid-Level Providers Mentored (Continued)**

Marc Moisi, MD, Assistant Professor, Department of Neurosurgery Wayne State University School of Medicine	2016 - 2017
Pawani Sachar, MD Vascular Neurologist, Providence Brain & Spine Institute Portland, Oregon	2016
Seong-Jin Moon, MD, PGY-3 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2015 - Present
Erick Garcia Gorbea, MD, PGY-5 Department of Neurosurgery, University of Texas Health Sciences Center San Antonio, Texas	2015 - 2017
Arianne Boylan, MD, Neurosurgeon Department of Neurosurgery, Yale New Haven Hospital New Haven, Connecticut	2014 - 2017
Mohamad Khaled, MD Neurosurgeon Springfield, Massachusetts	2014 - 2015
Parthasarathi Chamiraju, MD, PGY-6 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2014 - Present
Richard Garling, MD, PGY-4 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2014 - Present
Blake Walker, MD, PGY-4 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2014 - Present
Varun Chauhan, MD Department of Neurology, Detroit Medical Center/Wayne State University	2014 - Present
Shilpa Jain, MD Department of Radiology, Detroit Medical Center/Wayne State University	2014
Farzana Tariq, MD, PGY-4 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2013 - Present
Carol Wynn, NP Neurosurgery Nurse Practitioner, Providence Park Hospital Novi, Michigan	2012 - 2016
Gary Rajah, Jr., MD, PGY-5 Department of Neurosurgery, Detroit Medical Center/Wayne State University	2012 - Present

**TEACHING (Continued)**

**Residents/Mid-Level Providers Mentored (Continued)**

Wazim Mohamed, MD Vascular Neurologist & Neurointensivist, Assistant Professor, Department of Neurology, Wayne State University School of Medicine	2012 - 2013
Narendra Panapitiya, MD Pediatric Radiologist Lubbock, Texas	2012
Elizabeth Discolo, MD Department of Public Health Sciences, Medical University of South Carolina Charleston, South Carolina	2011 - 2016
Mohammed Hussain, MD Vascular and Interventional Neurologist JFK Medical Center, Edison, New Jersey	2011 - 2012
Matthew Schreckinger, MD Neurosurgeon Pismo Beach, California	2010 - 2017
Pratik Bhattacharya, MD, MPH Vascular Neurologist, St. Joseph Mercy Oakland Hospital Pontiac, Michigan	2010 - 2011
Royya Modir, MD Vascular Neurologist Assistant Professor, Department of Neurosciences University of California San Diego School of Medicine San Diego, California	2010
Matthew Chan, MD Neuroradiologist, Sutter Health Sacramento, California	2010
Neena Marupudi, MD Assistant Professor, Children's Hospital of Michigan Detroit, Michigan	2009 - 2016
Verrad Nyame, MD Neurosurgeon, San Juan Regional Medical Center Farmington, New Mexico	2009 - 2015
David Hong, MD Pediatric Neurosurgeon, Stanford Children's Health Walnut Creek, California	2009 - 2014

**TEACHING (Continued)**

**Residents/Mid-Level Providers Mentored (Continued)**

Mark Hoeprich, MD, MPP 2009 - 2012  
Neurosurgeon, Center for Neuro and Spine  
Canton, Ohio

Todd Francis, MD, PhD 2009 - 2011  
Neurosurgeon, Henry Ford-Macomb Hospital  
Clinton Charter Township, Michigan

Amit Kansara, MD 2009 - 2012  
Vascular Neurologist, Providence Brain & Spine Institute  
Affiliate Assistant Professor, Oregon Health and Sciences University  
Portland, Oregon

Bhavana Tetali, MS I 2017 - 2018  
Wayne State University School of Medicine

Cristian Chagas, MS III 2017  
Wayne State University School of Medicine

Riyad (Yazan) Kherallah, MS III 2017  
Wayne State University School of Medicine

Mitchell Huber, MS I 2016  
Wayne State University School of Medicine

**TEACHING (Continued)**

**Students Mentored**

Kaiyin Liu, MS II 2015 - 2016  
Wayne State University School of Medicine

Dennis Churchill, MD 2014  
PGY-2, Department of Radiology  
Indiana University School of Medicine

Raviteja Suryadevara, Student 2014 - 2018  
Wayne State University

Aniruddha Madurkar, Student 2014  
Wayne State University

Alex Petroj, Student, Macomb Community College 2014

Jannel Lee-Allen, MD, M.UP., PGY-1 2012 - 2015  
Internal Medicine, Ohio State University Wexner Medical Center



**TEACHING (Continued)**

**Residents/Mid-Level Providers Mentored (Continued)**

Armaity Minwalla, Student, University of Michigan 2012

Christopher Sy, MD 2012 - 2014  
PGY-3, Department of Neurosurgery, University of Texas Health Sciences  
Center  
San Antonio, Texas

Pavan Parasu, MD 2012  
PGY-5, Department of Radiology, University of Illinois at Chicago  
Chicago, Illinois

**Other**

Bedside and Procedural Teaching for Physicians 2009 - Present  
I regularly perform clinical bedside teaching for fellows, residents, and medical students. Trainees are usually from neurosurgery, neurology, radiology, emergency medicine, internal medicine, anesthesiology, and otolaryngology backgrounds. I also teach vascular anatomy, pathophysiology, procedural technique, and complication avoidance/management in the neuroangiography suite.

Teaching for Non-Physicians 2009 - Present  
At the academic and community hospitals where I practice, I frequently instruct interventional radiology technologists and nurses, certified registered nurse anesthetists, neuroscience nurses, internal medicine mid-level providers, and emergency medical personnel about neurointerventional procedures and perioperative management.

**CLINICAL TRIALS, GRANTS, AND OTHER FUNDING**

***Funded Clinical Trials and Grants***

ACE: An Aneurysm Coiling Efficiency Study of the Penumbra Coil 400 System 2012 - 2014  
Principal Investigator, Detroit Medical Center, Detroit, Michigan  
Funding source: Penumbra, Inc., Amount: \$1500/patient

Vitesse Intracranial Stent Study for Ischemic Therapy (VISSIT) Trial 2011 - 2012  
Co-Investigator; Principal Investigator: Andrew Xavier, MD  
St. Joseph Mercy Oakland Hospital, Pontiac, Michigan  
Funding source: Codman & Shurtleff, Amount: \$9,610.66

Stroke Treatment and Revascularization Trial (START) 2011  
Sub-Investigator; Principal Investigator: Richard Fessler, MD  
St. John's Providence Health System, Southfield, Michigan  
Funding source: Penumbra, Inc., Amount: \$0

**CLINICAL TRIALS, GRANTS, AND OTHER FUNDING (Continued)**

***Funded Clinical Trials and Grants (Continued)***

- Thrombectomy Revascularization of Large-Vessel Occlusions (TREVO2) Trial 2011  
Co-Investigator; Principal Investigator: Andrew Xavier, MD  
St. Joseph Mercy Oakland Hospital, Pontiac, Michigan  
Funding source: Concentric Medical, Inc/ Stryker Neurovascular.  
Amount: \$56,000
- Desmoteplase in Acute Ischemic Stroke (DIAS-2) Trial 2005 - 2006  
Co-Investigator; Principal Investigator: Lee Schwamm, MD  
Massachusetts General Hospital, Boston, Massachusetts  
Funded by Paion GmbH, Forest Laboratories, Amount: Not available
- Randomized, Double-Blind, Placebo Controlled, Multi-Centre, Parallel Groups 2005 - 2006  
Confirmatory Efficacy and Safety Trial of Activated Recombinant Factor VII  
(NovoSeven®) in Acute Intracerebral Haemorrhage  
Co-Investigator; Principal Investigator: Jonathan Rosand, MD, MSc  
Massachusetts General Hospital, Boston, Massachusetts  
Funded by Novo Nordisk, Amount: Not available
- Antihypertensive Treatment of Acute Cerebral Hemorrhage (ATACH) Study 2005 - 2006  
Co-Investigator; Principal Investigator: Joshua Goldstein, MD  
Massachusetts General Hospital, Boston, Massachusetts  
Funded by National Institutes of Health (R01 NS044976), Amount: \$37,935

***Nonfunded Grants and Contracts***

- R01 submission: Relation of haptoglobin isoforms as risk factors for vasospasm 2012  
after subarachnoid hemorrhage  
Submitted with Lake Biosciences LLC (Orinda, CA)

***Institutional Review Board protocols***

- Cervical spine C1/C2 puncture for cerebrospinal fluid sampling or myelography 2017  
**Principal Investigator**, Wayne State University/Detroit Medical Center,  
Detroit, Michigan
- Balloon-assisted coiling of cerebral aneurysms in the flow diversion era 2017  
**Principal Investigator**, Wayne State University/Detroit Medical Center,  
Detroit, Michigan
- Codman Enterprise Vascular Reconstructive Device and Delivery System - 2016 - Present  
Humanitarian Use Device (HUD)  
**Sub-Investigator**; Principal Investigator: Aniel Majjhoo, MD, McLaren Macomb  
Hospital, Mt. Clemens, Michigan
- Wingspan HUD – Humanitarian Device – Wingspan Stent System with Gateway 2016 - Present  
PTA Balloon Catheter  
**Sub-Investigator**; Principal Investigator: Aniel Majjhoo, MD, McLaren Macomb  
Hospital, Mt. Clemens, Michigan

**CLINICAL TRIALS, GRANTS, AND OTHER FUNDING (Continued)**

***Institutional Review Board protocols (Continued)***

Neuroform EZ – Humanitarian Device – Neuroform EZ Stent System <b>Sub-Investigator</b> , Principal Investigator: Aniel Majjhoo, MD, McLaren Macomb Hospital, Mt. Clemens, Michigan	2016 - Present
Codman Enterprise2 Vascular Reconstruction Device (VRD) <b>Principal Investigator</b> , Beaumont Hospital-Dearborn, Dearborn, Michigan	2016 - Present
The Outcome after Endovascular Therapy of Intracranial Aneurysms using Cordis ENTERPRISE Neurovascular Stent <b>Principal Investigator</b> , Wayne State University, Detroit, Michigan	2016 - Present
MicroVention Low-profile Visualized Intraluminal Support (LVIS) or LVIS Jr. Humanitarian Use Device (“LVIS HUD”) <b>Principal Investigator</b> , Beaumont Hospital-Dearborn, Dearborn, Michigan	2016 - Present
MicroVention Low-profile Visualized Intraluminal Support (LVIS) or LVIS Jr. Humanitarian Use Device (“LVIS HUD”) <b>Principal Investigator</b> , Wayne State University/Detroit Medical Center Detroit, Michigan	2015 - Present
Codman Enterprise Vascular Reconstructive Device and Delivery System - Humanitarian Use Device (HUD) <b>Principal Investigator</b> , McLaren Macomb Hospital, Mt. Clemens, Michigan	2013 – 2016
Wingspan HUD – Humanitarian Device – Wingspan Stent System with Gateway PTA Balloon Catheter <b>Principal Investigator</b> , McLaren Macomb Hospital, Mt. Clemens, Michigan	2013 – 2016
Neuroform EZ – Humanitarian Device – Neuroform EZ Stent System <b>Principal Investigator</b> , McLaren Macomb Hospital, Mt. Clemens, Michigan	2013 – 2016
The Outcome after Endovascular Therapy of Intracranial Aneurysms using Cordis ENTERPRISE Neurovascular Stent <b>Co-Investigator</b> ; Principal Investigator: Andrew Xavier, MD Wayne State University, Detroit, Michigan	2009 – 2016
The Neuroform Microdelivery Stent System, a Humanitarian Use Device <b>Co-Investigator</b> ; Principal Investigator: Andrew Xavier, MD Wayne State University, Detroit, Michigan	2009 - 2015

## PUBLICATIONS

### *Reports of Original Work*

*\*current/former trainee*

1. Rajah G\*, Saber H\*, Luqman A, Mittal S, **Narayanan S**. Bilateral venous sinus stenosis: Idiopathic intracranial hypertension and endovascular venous sinus stenting: 2-dimensional operative video. *Oper Neurosurg (Hagerstown)*. 2018 Feb 10 [Epub ahead of print]. PMID: 29444263
2. Saber H\*, Rajah GB\*, Kherallah RY\*, Jadhav AP, **Narayanan S**. Comparison of the efficacy and safety of thrombectomy devices in acute stroke: a network meta-analysis of randomized trials. *J Neurointerv Surg*. 2017 Nov 16 [Epub ahead of print]. PMID: 29246906
3. Saber H\*, **Narayanan S**, Palla M, Saver JL, Nogueira RG, Yoo AJ, Sheth SA. Mechanical thrombectomy for acute ischemic stroke with occlusion of the M2 segment of the middle cerebral artery: a meta-analysis. *J Neurointerv Surg*. 2017 Nov 10 [Epub ahead of print]. PMID: 29127196
4. Zaidat OO, Fitzsimmons BF, Woodward BK, Wang Z, Killer-Oberpfalzer M, Wakhloo A, Gupta R, Kirshner H, Megerian JT, Lesko J, Pitzer P, Ramos J, Castonguay AC, Barnwell S, Smith WS, Gress DR; VISSIT Trial Investigators. Effect of a balloon-expandable intracranial stent vs medical therapy on risk of stroke in patients with symptomatic intracranial stenosis: the VISSIT randomized clinical trial. *JAMA*. 2015 Mar 24-31;313(12):1240-8. PMID: 25803346  
*My role: Collaborator and Co-Investigator.*
5. Zaidat OO, Castonguay AC, Fitzsimmons BF, Woodward BK, Wang Z, Killer-Oberpfalzer M, Wakhloo A, Gupta R, Kirshner H, Eliasziw M, Thomas Megerian J, Shetty S, Yoklavich Guilhermier M, Barnwell S, Smith WS, Gress DR; VISSIT Trial Investigators. Design of the Vitesse Intracranial Stent Study for Ischemic Therapy (VISSIT) trial in symptomatic intracranial stenosis. *J Stroke Cerebrovasc Dis*. 2013 Oct;22(7):1131-9. PMID: 23261207  
*My role: Collaborator and Co-Investigator.*
6. Nagaraja N\*, Bhattacharya P\*, Norris G, Coplin W, **Narayanan S**, Xavier A, Rajamani K, Chaturvedi S: Arrival by ambulance is associated with acute stroke intervention in young adults. *Journal of Neurological Sciences*. 2012;316(1-2):168-196. PMID: 22342394
7. Kansara A\*, Pandey P\*, Tiwari A\*, Rayes M\*, **Narayanan S**, Xavier AR: Stenting of acute and subacute intracranial vertebrobasilar arterial occlusive lesions. *J Neurointerv Surg*. 2012;4(4):274-280. PMID: 21990494
8. Xavier AR, Tiwari A\*, Purai N\*, Rayes M\*, Pandey P\*, Kansara A\*, **Narayanan S**, Chaturvedi C: Safety and efficacy of intracranial stenting for acute ischemic stroke beyond 8 h of symptom onset. *J Neurointerv Surg*. 2012;4(2):94-100. PMID: 21990492
9. Xavier A, Abdelbaky A\*, Rayes M\*, Tiwari A\*, **Narayanan S**. Clinical and angiographic outcome in patients with completely occluded intracranial aneurysms by endovascular coiling: our experience. *J Neurointerv Surg*. 2011;3(4):335-9. PMID: 21990435

## **PUBLICATIONS (Continued)**

### **Reports of Original Work (Continued)**

10. Compton MT, Goulding SM, Whicker NE, Mullins M, **Nathan S**, Ressler K: An Exploratory Study of the Potential Prognostic Usefulness of the Routinely Conducted Computed Tomography Scan in Patients Hospitalized for a First Episode of Psychosis. *Clinical Schizophrenia & Related Psychoses*. 2009;3(1):23-30.
11. **Narayanan S**, Murchison AP, Wojno TH, Dion JE: Percutaneous trans-superior orbital fissure embolization of carotid-cavernous fistulas: technique and preliminary results. *Ophthalmic Plastic and Reconstructive Surgery*. 2009;25(4):309-313. PMID:19617793
12. Romano JG, Rabinstein AA, Arheart KL, **Nathan S**, Campo-Bustillo I, Koch S, Forteza AM. Microemboli in Aneurysmal Subarachnoid Hemorrhage. *Journal of Neuroimaging*. 2008;18(4):396-401. PMID: 18494776

### **Case Reports**

1. Raval K\*, **Narayanan S**, Haridas A, Shahin G. Ruptured AVM. Case in Point 2017 (accepted).
2. Garling RJ\*, Rajah G\*, **Narayanan S**, Rangel-Castilla L, Haridas A. Pial Resection Technique of a Cervical Spinal Arteriovenous Malformation in a Pediatric Patient. *Oper Neurosurg (Hagerstown)* 2017 Jul 25 [Epub ahead of print]. PMID: 28973633
3. Rao S\*, **Narayanan S**, Nanjireddy R\*, Mittal S, Basha M. Pearls & Oysters: Symptomatic cerebral vasospasm on conventional angiography following temporal lobe epilepsy surgery. *Neurology*. 2017;88(23):e230-2. PMID: 28583939
4. Mittal S, Monsell EM, **Narayanan S**, Kupsky WJ, Guthikonda M, Mittal S: Synchronous occurrence of paraganglioma of the glomus jugulare and olfactory groove meningioma. *Clin Neuropath*. 2013;32(4):328-331. PMID: 23442304
5. Hui FK, **Narayanan S**, Cawley CM: Posterior-to-anterior circulation access using the Penumbra stroke system for mechanical thrombectomy of a right middle cerebral artery thrombus. *World Neurosurgery*. 2010; 73(1):17-21. PMID: 20452865

### **Reviews of the Literature**

1. Rajah G\*, **Narayanan S**, Rangel-Castilla L. Update on flow diverters for the endovascular management of cerebral aneurysms. *Neurosurgical Focus*. 2017 June;42(6):E2. PMID: 28565980
2. Heit JJ, Do HM, Prestigiacomo CJ, Delgado-Almandoz JA, English J, Gandhi CD, Albuquerque FC, **Narayanan S**, Blackham KA, Abruzzo T, Albani B, Fraser JF, Heck DV, Hussain MS, Lee S, Ansari SA, Hetts SW, Bulsara KR, Kelly M, Arthur AS, Patsalides A, Pride GL, Powers CJ, Alexander MJ, Meyers PM, Jayaraman MJ. Guidelines and parameters: percutaneous sclerotherapy for the treatment of head and neck venous and lymphatic malformations. *J Neurointerv Surg*. 2016 Jan 22 [Epub ahead of print]. PMID: 26801946

**PUBLICATIONS (Continued)**

**Reviews of the Literature (Continued)**

3. Powers CJ, Hirsch JA, Hussain MS, Patsalides AT, Blackham KA, **Narayanan S**, Lee SK, Fraser JF, Bulsara KR, Prestigiacomo CJ, Gandhi CD, Abruzzo T, Do HM, Meyers PM, Albuquerque FC, Frei D, Kelly ME, Pride GL, Jayaraman MV; Standards and Guidelines committee of the Society of NeuroInterventional Surgery. Standards of practice and reporting standards for carotid artery angioplasty and stenting. *J Neurointerv Surg.* 2014;6(2):87-90. PMID: 24198273
4. Chandra RV, Meyers PM, Hirsch JA, Abruzzo T, Eskey CJ, Hussain MS, Lee SK, **Narayanan S**, Bulsara KR, Gandhi CD, Do HM, Prestigiacomo CJ, Albuquerque FC, Frei D, Kelly ME, Mack WJ, Pride GL, Jayaraman MV. Vertebral augmentation: report of the Standards and Guidelines committee of the Society of NeuroInterventional Surgery. *J Neurointerv Surg.* 2014;6(1):7-15. PMID: 24198272
5. **Narayanan S**, Singer R, Abruzzo TA, Hussain MS, Powers CJ, Prestigiacomo CJ, Heck DV, Sunshine JL, Kelly M, Jayaraman MV, Meyers PM; on behalf of the Standards and Guidelines Committee of the Society of NeuroInterventional Surgery. Reporting standards for balloon test occlusion. *J Neurointerv Surg.* 2013;5(6):503-5. PMID: 23794674
6. Patsalides A, Bulsara KR, Hsu DP, Abruzzo T, **Narayanan S**, Jayaraman MV, Duckwiler G, Klucznik RP, Kelly M, Hirsch JA, Heck D, Sunshine J, Frei D, Alexander MJ, Do HM, Meyers PM: Standards of practice: embolization of ruptured and unruptured intracranial aneurysms. *J Neurointerv Surg.* 2013;5(4):283-288. PMID: 23576604
7. **Narayanan S**, Hurst RW, Abruzzo TA, Albuquerque FC, Blackham KA, Bulsara KR, Derdeyn CP, Gandhi CD, Hirsch JA, Hsu DP, Hussain MS, Jayaraman MV, Meyers PM, Patsalides A, Prestigiacomo CJ: Standard of practice: embolization of spinal arteriovenous fistulae, spinal arteriovenous malformations, and tumors of the spinal axis. *J Neurointerv Surg.* 2013;5(1):3-5. PMID: 23112254
8. Hussain MS, Fraser JF, Abruzzo T, Blackham KA, Bulsara KR, Derdeyn CP, Gandhi CD, Hirsch JA, Hsu DP, Jayaraman MV, Meyers PM, **Narayanan S**, Prestigiacomo CJ, Rasmussen PA, Society for NeuroInterventional Surgery: Standard of practice: endovascular treatment of intracranial atherosclerosis. *J Neurointerv Surg.* 2012;4(6):397-406. PMID: 22705876
9. Duffis EJ, Gandhi CD, Prestigiacomo CJ, Abruzzo T, Albuquerque F, Bulsara KR, Derdeyn CP, Fraser JF, Hirsch JA, Hussain MS, Do HM, Jayaraman MV, Meyers PM, **Narayanan S**, Society for NeuroInterventional Surgery: Head, neck, and brain tumor embolization guidelines. *J Neurointerv Surg.* 2012;4(4):251-255. PMID: 22539531
10. Meyers PM, Blackham KA, Abruzzo TA, Gandhi CD, Higashida RT, Hirsch JA, Moran CJ, **Narayanan S**, Prestigiacomo CJ, Tarr R: Society of NeuroInterventional Surgery Standards of Practice: general considerations. *J Neurointerv Surg.* 2012;4:11-15, 2012. PMID: 22166819

## **PUBLICATIONS (Continued)**

### **Reviews of the Literature (Continued)**

11. Abruzzo T, Moran CJ, Blackham KA, Eskey CJ, Lev R, Meyers PM, **Narayanan S**, Prestigiacomo CJ: Society of NeuroInterventional Surgery Standards of Practice: invasive interventional management of post-hemorrhagic cerebral vasospasm in patients with aneurysmal subarachnoid hemorrhage. *J Neurointerv Surg.* 2012;4(3):169-177. PMID: 22374130
12. Blackham KA, Meyers PM, Abruzzo T, Albuquerque FC, Fiorella D, Fraser J, Frei D, Gandhi CD, Heck DV, Hirsch JA, Hsu DP, Jayaraman M, **Narayanan S**, Prestigiacomo C, Sunshine JL, Society of NeuroInterventional Surgery: Endovascular therapy of acute ischemic stroke: report of the Society of NeuroInterventional Surgery Standards of Practice committee. *J Neurointerv Surg.* 2012;4(2):87-93. PMID: 22278933
13. Novakovic RL, Toth G, **Narayanan S**, Zaidat OO: Retrievable stents, “stentrievors,” for endovascular acute ischemic stroke therapy. *Neurology.* 2012;79 (13 Suppl 1): S148-157. PMID: 23008390
14. **Narayanan S**: Endovascular management of intracranial dural arteriovenous fistulas. *Neurology Clinics* 2010;28(4): 899-911. PMID: 20816269
15. **Nathan S**, Greer DM. Brain Death. *Seminars in Anesthesia, Perioperative Medicine and Pain.* 2006;25(4):225-231.

### **Editorials**

1. **Narayanan S**, Chaturvedi S: Cerebrovascular disease: Carotid endarterectomy versus stenting-long live the king? *Nature Reviews. Cardiology.* 2006;7(6):304-305. PMID: 20508607

### **Letters to the Editor**

1. Chaturvedi S, Majjho A\*, **Narayanan S**, Hohler AD, Lee JD: Improving safety for the neurologic patient: Evaluating medications, literacy, and abuse. *Neurology.* 2011;76(21): 1848-1849. PMID: 21606462

### **Book Authorship, Editorship, and Chapters**

1. Ortega Gutierrez S, Kaminsky I, Marupudi N\*, **Narayanan S**: Chapter 39: Spinal Vascular Lesions, in: *Neurocritical Care Management of the Neurosurgical Patient*, 1<sup>st</sup> Edition. Kumar, Levine, Schuster & Kofke, editor, Elsevier, 2017.
2. Chaturvedi S, **Narayanan S**: Chapter 49: Carotid Occlusion Syndromes, in: *Stroke Syndromes*, Third Edition. Louis Caplan, editor, 2012.
3. **Narayanan S**, Cawley CM. Chapter 391: Treatment of Other Intracranial Dural Arteriovenous Fistulas, in: *Youman’s Textbook of Neurological Surgery*, Sixth Edition. H. Richard Winn, 2011.
4. **Narayanan S**, Tong FC: Percutaneous Vertebroplasty and Balloon Kyphoplasty for the Treatment of Acute Painful Pathologic and Non-Pathologic Fractures, in: *Myeloma Therapy: Pursuing the Plasma Cell*. Sagar Lonial (Editor), Humana Press, 2008.

## **PUBLICATIONS (Continued)**

### ***Published Abstracts***

1. Tsappidi S, Mullins M, **Narayanan S**, Sribnick E\*, Cawley CM, Dion JE. A hardware store for the brain – an introduction to advanced intracranial monitoring and therapeutic devices on current neuroimaging. Electronic exhibit at American Roentgen Ray Society 109<sup>th</sup> annual meeting, April 2009. American Journal of Roentgenology 2009:192(5).

### ***Non-Peer-Reviewed Publications***

1. **Narayanan S**. Atlas of Interventional Neurology. Adnan Qureshi (Editor), Demos Publishing, 2009. Book review, J Neuro Sci 2012. Epub 2012 Jun 6.
2. **Narayanan S**. When prevention fails: treatment for acute large-vessel occlusion. American Academy of Neurology 63<sup>rd</sup> Annual Meeting Syllabus, 2011.
3. **Narayanan S**, Dafer R: Stroke in Young Adults. In: Gilman S, editor. Medlink Neurology. San Diego: Medlink Corporation. Available at www.medlink.com, 2010.
4. Talebi T, Herdman AV, **Narayanan S**, Montero A, Kauh J: Worsening neurological symptoms in an older man with history of rectal cancer, in: Consultant. Volume 50, Number 7, 2010.

## **PRESENTATIONS**

### **Podium Presentations (refereed)**

*\*current/former trainee*

1. Saber H\*, **Narayanan S**. Comparison of thrombectomy devices and strategies: A Bayesian network meta-analysis. 10<sup>th</sup> Annual Society of Vascular and Interventional Neurology (SVIN) meeting, 2017.
2. Saber H\*, Rajah G\*, Chamiraju P\*, **Narayanan S**. Venous sinus stenting for idiopathic intracranial hypertension. Oral abstract Data Blitz presentation, 142<sup>nd</sup> American Neurological Association meeting, 2017.
3. Stevenson J\*, Shen J, Geng X, Li F, Wang S, **Narayanan S**, Ding Y: Omega-3 fatty acid supplement prevents progression of intracranial atherosclerosis. International Stroke Conference (ISC), 2016.
4. Stevenson J\*, Shen J, Geng X, Li F, Wang S, **Narayanan S**, Ding Y: Omega-3 fatty acid supplement prevents progression of intracranial atherosclerosis. Wayne State University School of Medicine Medical Student Research Symposium, 2016.
5. Asmaro K\*, Kochanski R, Peng C, Lee I, **Narayanan S**, Huttemann M, Ding Y: Ethanol administration reduces brain injury by preserving and regulating oxidative metabolism. Wayne State University School of Medicine Medical Student Research Symposium, 2012.
6. **Narayanan S**: Ophthalmic artery origin occlusion by microcatheter during stent-coiling of anterior communicating artery aneurysm. 5<sup>th</sup> Annual SVIN meeting, 2012.
7. **Narayanan S**: In-situ thrombolysis and thromboaspiration of cerebral venous thrombosis. 5<sup>th</sup> Annual SVIN meeting, 2012.
8. Romano JG, Arheart K, Rabinstein AA, **Nathan S**, Campo-Bustillo I, Koch S, Forteza AM: Microemboli Contribute to Subarachnoid Hemorrhage-Associated Cerebral Ischemia. ISC, 2005.



## PRESENTATIONS (Continued)

### Poster Presentations (refereed)

1. Saber H\*, Chamiraju P\*, **Narayanan S**. Venous sinus stenting for idiopathic intracranial hypertension : a systematic analysis. 14<sup>th</sup> Annual SNIS Meeting, 2017.
2. Saber H\*, Chamiraju P\*, **Narayanan S**. Risk factors associated with major ischemic or hemorrhagic complications following Pipeline embolization of cerebral aneurysms: a pooled analysis. 14<sup>th</sup> Annual SNIS Meeting, 2017.
3. Saber H\*, Chamiraju P\*, **Narayanan S**, Rangel-Castilla L. Endovascular thrombectomy and risk of severe disability or all-cause mortality after acute ischemic stroke: a meta-analysis. 9<sup>th</sup> Annual SVIN Meeting, 2016.
4. Nanjireddy R\*, **Narayanan S**, Mittal S, Loeb J, Basha M: Intracranial vasospasm following temporal lobe epilepsy surgery demonstrated on conventional angiography. 65<sup>th</sup> Annual American Academy of Neurology (AAN) Meeting, 2013.
5. Dhakar M\*, Chaturvedi S, Madhavan R, Rajamani M, Norris G, Xavier A, **Narayanan S**, Tsappidi S, Bhattacharya P\*: Race influences the recovery from acute stroke interventions. 65<sup>th</sup> Annual AAN Meeting, 2013.
6. Thomas A\*, **Narayanan S**: Cervical puncture: an important tool for the interventional neurologist. 65<sup>th</sup> Annual AAN Meeting, 2013.
7. **Narayanan S**: Seizures after cisternography: case report and review of the literature. 5<sup>th</sup> Annual SVIN Meeting, 2012.
8. Majjhoo AQ\*, Naravetla B\*, Muthusamy A, Bhattacharya P\*, **Narayanan S**, Xavier AR: Combining intravenous and endovascular approaches to treat severe strokes in the real world: a safety analysis. 64<sup>th</sup> Annual AAN Meeting, 2012.
9. Kansara A\*, Damani R\*, Tiwari A\*, **Narayanan S**, Chaturvedi S, Xavier A. Endovascular intervention for post cardiac catheterization ischemic strokes. 64<sup>th</sup> Annual AAN Meeting, 2012.
10. Madhavan R, Bhattacharya P\*, Xavier A, **Narayanan S**, Rajamani K, Santhakumar S, Norris G, Coplin W, Parliament C, Chaturvedi S. Hospital features affect resource utilization: The Michigan Stroke Network Experience. 64<sup>th</sup> Annual AAN Meeting, 2012.
11. Rayes M\*, **Narayanan S**: Hemodynamic effects and safety of intra-arterial milrinone in vasospasm patients. American Society of Neuroradiology 50<sup>th</sup> Annual Meeting, 2012.
12. **Narayanan S**, Madhavan R, Parliament C, Bhattacharya P\*, Xavier A, Chaturvedi S: Utilization of a statewide telestroke network and sustainability over time. International Stroke Conference (ISC), 2012.
13. Abdelbaky A\*, Rayes M\*, **Narayanan S**, Xavier A: Clinical and Angiographic Outcome in Completely Occluded Intracranial Aneurysms by Endovascular Coiling. Congress of Neurological Surgeons meeting, 2011.
14. **Narayanan S**, Wall E, White S, Xavier A, Chaturvedi S: A Systemwide Approach to Decreasing Door-to-Needle Times in Acute Stroke. ISC, 2011.
15. Nagaraja N\*, Bhattacharya P\*, Norris G, Coplin W, **Narayanan S**, Xavier A, Rajamani K, Chaturvedi S: Does Arrival by Ambulance Predict Acute Stroke Intervention in Young Adults? ISC, 2011.
16. Tiwari A\*, Pandey P\*, Kansara A\*, Rayes M\*, **Narayanan S**, Xavier A: Safety of Stent-Supported Revascularization in the Setting of Acutely Symptomatic/Unstable Intracranial Atherosclerotic Disease. ISC, 2010.
17. Tiwari A\*, Pandey P\*, Kansara A\*, Rayes M\*, **Narayanan S**, Xavier A: Safety of Stent-Supported Intracranial Recanalization in the Setting of Acute Cerebrovascular Occlusions. ISC, 2010.

## PRESENTATIONS (Continued)

### Poster Presentations (Continued)

18. **Narayanan S**, Tiwari A\*, Rayes M\*, Majihoo A\*, Xavier A: Endovascular Revascularization of Severe Brachiocephalic Stenosis Presenting with an Acute Central Retinal Artery Occlusion. 3rd Annual SVIN Meeting, 2010.
19. **Narayanan S**, Tiwari A\*, Pandey P\*, Chaturvedi S: Endovascular Recanalization for Acute Occlusion Post-Carotid Endarterectomy. 3rd Annual SVIN Meeting, 2010.
20. Kansara A\*, Tiwari A\*, **Narayanan S**, Pandey P\*, Xavier A: Exploratory Analysis of Time Delays in Administering Endovascular Therapy for Acute Ischemic Stroke. 3rd Annual SVIN Meeting, 2010.
21. Kalia JS, Natarajan S, Batista L, Rayes M\*, Etezadi V, Schuette AJ\*, Chowdry S, Majid A, **Narayanan S**, Levy E, Pryor J, Nogueira R, Xavier A, Linfante I, Gupta R, Mueller-Kronast N, Norbash A, Nguyen T, Edgell R, Zaidat OO: Safety and Feasibility of Elective Endovascular Coiling of Very Small (2-7 mm) Unruptured Cerebral Aneurysms (ECOSA study): A Multicenter Experience Analysis. 3rd Annual SVIN Meeting, 2010.
22. **Narayanan S**, Tong FC, Cawley CM, Dion JE: Onyx®-34 embolization of left parieto-occipital artery mycotic aneurysm: technical case report. 1st Annual SVIN Meeting, 2008.
23. Concha M, Symes S, Goodkin K, **Nathan S**, Zortea P, Romano JG, Forteza AM, Kolber M: Cerebrovascular Risk in HIV-1-infected Subjects with Lipodystrophy Syndrome and Long-term Protease Inhibitor Exposure. ISC, 2003.

## INVITED LECTURES

### International/National

1. **Narayanan S**: What about STROKE: Elevating the quality and quantity of stroke care in the thrombectomy era. Microvention Fellows Applying Clinical Endovascular Therapies & Strategies (FACETS) course. February 8, 2018.
2. **Narayanan S**: Faculty Perspectives: Faculty Perspectives: Optimizing Acute Stroke Treatment. FACETS course. February 8, 2018.
3. **Narayanan S**: Faculty Perspectives: Flow Diverters, Flow Disruptors, Coil Assist Stents, & Occlusion Balloons. FACETS course. February 9, 2018.
4. **Narayanan S**: Faculty Perspectives: Complication Management, FACETS course. February 9, 2018.
5. **Narayanan S**: Treatment Options for Fistulae and AVMs. FACETS course. February 10, 2018.
6. **Narayanan S**: What is the new standard for acute stroke care? Cedars-Sinai 10<sup>th</sup> Annual Neuroendovascular Symposium: Developing Stroke Systems of Care. January 20, 2018.
7. **Narayanan S**: So You Want To Be a Stroke Interventionalist? Comprehensive Stroke Centers: Efficiency and Infrastructure for Endovascular Interventions. American Heart Association Scientific Sessions 2017. November 13, 2017.
8. **Narayanan S**: Patients who fall through the cracks: Difficult Access. 13<sup>th</sup> Annual Society of NeuroInterventional Surgery Meeting. July 25, 2016.
9. **Narayanan S**: An Update on Acute Stroke Management for the Non-neurologist. Cardiovascular Review & Innovations, Amarillo, Texas. May 7, 2016.
10. **Narayanan S**: Evidence-Based Approach to the Management of Carotid Artery Disease. Cardiovascular Review & Innovations, Amarillo, Texas. May 7, 2016.
11. **Narayanan S**: Controversies in Management of Neurovascular Disease Illustrated through Case Examples: Stroke. In: Society of NeuroInterventional Surgery (SNIS)/Joint Cerebrovascular Section Fellows' Course. August 1, 2014.

**INVITED LECTURES (Continued)**

***International/National (Continued)***

12. **Narayanan S:** Stroke care should be centralized. In: IA Stroke Debates, 4<sup>th</sup> annual SNIS International Endovascular Stroke Conference: February 10, 2014.
13. **Narayanan S:** Aneurysm case presentations. 9<sup>th</sup> Annual Society of NeuroInterventional Surgery Meeting. July 26, 2012.
14. **Narayanan S:** Intracranial aneurysms. 33<sup>rd</sup> Annual Association of Kerala Medical Graduates (AKMG) meeting: July 13, 2012.
15. **Narayanan S:** Interventional Neurology: Building and keeping a practice. 4<sup>th</sup> Annual Society of Vascular and Interventional Neurology Meeting: October 21, 2011.
16. **Narayanan S:** When Prevention Fails: Treatment of Acute Large-Vessel Occlusion. 63<sup>rd</sup> Annual American Academy of Neurology Meeting: April 11, 2011.
17. **Narayanan S:** Interventional Management of Acute Stroke. 30<sup>th</sup> Annual AKMG meeting, July 4, 2009.

***Local/Regional***

1. **Narayanan S:** Endovascular neurosurgery. Neurosurgery Student Interest Group Meeting, Wayne State University (WSU): January 30, 2018.
2. **Narayanan S:** Acute Ischemic Stroke Intervention. Anesthesia resident lecture series, Harper University Hospital: October 11, 2017.
3. **Narayanan S:** Acute Ischemic Stroke Intervention. Anesthesia department meeting, Sinai-Grace Hospital (SGH): September 20, 2017.
4. **Narayanan S:** Materials for thrombectomy procedures. In-service, Sinai-Grace Hospital cath lab staff meeting: August 31, 2017.
5. **Narayanan S:** CODE STROKE: Acute ischemic stroke intervention. Physical Medicine & Rehabilitation Medicine Department lecture series, Beaumont Hospital-Taylor: August 18, 2017.
6. **Narayanan S:** Products for acute stroke intervention. In-service, Interventional Radiology Staff, Beaumont Hospital-Dearborn (BH-D): August 3, 2017.
7. **Narayanan S:** CODE STROKE: Acute ischemic stroke intervention. Emergency Medicine Resident lecture series, SGH: July 6, 2017.
8. **Narayanan S:** Acute Ischemic Stroke Treatment. In-service for SICU RNs, BH-D: May 11, 2017.
9. **Narayanan S:** Acute Ischemic Stroke Treatment, ED RN/specialist meeting, Beaumont Medical Center-Canton: May 4, 2017.
10. **Narayanan S:** Imaging Protocols for Acute Ischemic Stroke Treatment, ED department meeting, Sinai-Grace Hospital: May 2, 2017.
11. **Narayanan S:** Acute Ischemic Stroke Treatment, ED department meeting, Beaumont Medical Center-Canton: April 20, 2017.
12. **Narayanan S:** Acute Ischemic Stroke intervention: thrombolysis and thrombectomy. In-service, Sinai-Grace Hospital cath lab staff meeting: April 18, 2017.
13. **Narayanan S:** Acute Ischemic Stroke Treatment. In-service for Dearborn Heights EMS: September 27, 2016.
14. **Narayanan S:** Acute Ischemic Stroke Treatment. In-service for Dearborn Heights EMS: September 26, 2016.
15. **Narayanan S:** Acute Ischemic Stroke In-Service for 7North/Neuroscience floor RNs, Beaumont Hospital-Dearborn: September 16, 2016.
16. **Narayanan S:** Acute Ischemic Stroke Treatment, ED department meeting, BH-D: August 31, 2016.

**INVITED LECTURES (Continued)**

**Local/Regional (Continued)**

17. **Narayanan S:** Acute Ischemic Stroke Treatment. In-service for Allen Park EMS: August 30, 2016.
18. **Narayanan S:** Acute Ischemic Stroke Treatment. In-service for Dearborn EMS: August 29, 2016.
19. **Narayanan S:** Acute Ischemic Stroke Treatment. In-service for Dearborn EMS: August 25, 2016.
20. **Narayanan S:** Acute Ischemic Stroke Treatment. In-service for Allen Park EMS: August 23, 2016.
21. **Narayanan S:** Acute Ischemic Stroke In-Service for 7North/Neuroscience floor RNs, Beaumont Hospital-Dearborn: August 23, 2016.
22. **Narayanan S:** Acute Ischemic Stroke Intervention. CRNA meeting, BH-D: August 10, 2016.
23. **Narayanan S:** Acute Ischemic Stroke Treatment. Trenton Rotary Club meeting, Trenton, MI: August 1, 2016.
24. **Narayanan S:** Endovascular Treatment of Acute Ischemic Stroke. In-service, Sinai-Grace Hospital cath lab staff meeting: May 11, 2016.
25. **Narayanan S:** Endovascular Treatment of Acute Ischemic Stroke. In-service, Interventional Radiology staff, BH-D: May 3, 2016.
26. **Narayanan S:** Acute Ischemic Stroke In-Service for 3North/Neuroscience ICU RNs, BH-D: April 8, 2016.
27. **Narayanan S:** Acute Ischemic Stroke In-Service for ED nurses/Emergency Medical Services, BH-D: April 5, 2016.
28. **Narayanan S:** Acute Ischemic Stroke In-Service for ED nurses/Emergency Medical Services, BH-D: March 29, 2016.
29. **Narayanan S:** Acute Ischemic Stroke In-Service for 3North/Neuroscience ICU RNs, BH-D: March 24, 2016.
30. **Narayanan S:** Practical considerations during neuroendovascular procedures. Neurosurgery Student Interest Group Meeting, Wayne State University (WSU): January 27, 2016.
31. **Narayanan S:** Acute Ischemic Stroke In-Service for ICU nurses, Beaumont Hospital-Taylor: May 21, 2015.
32. **Narayanan S:** Acute Ischemic Stroke In-Service for ED nurses, Beaumont Hospital-Taylor: May 21, 2015.
33. **Narayanan S:** Acute Ischemic Stroke Intervention, ED department meeting, Beaumont Hospital-Wayne: May 20, 2015.
34. **Narayanan S:** Endovascular Treatment of Acute Ischemic Stroke. In-service, Interventional Radiology/Electrophysiology staff, BH-D: May 19, 2015.
35. **Narayanan S:** Acute Ischemic Stroke Intervention, ED department meeting, Beaumont Hospital-Trenton: May 13, 2015.
36. **Narayanan S:** Neurointerventional Program, Cardiovascular Section meeting, BH-D: May 6, 2015.
37. **Narayanan S:** Embolization of Intracranial Aneurysms. In-service, Interventional Radiology/Electrophysiology staff, BH-D: May 5, 2015.
38. **Narayanan S:** Acute Ischemic Stroke Intervention, ED department meeting, BH-D: April 29, 2015.
39. **Narayanan S:** Acute Ischemic Stroke in-Service for ED/ICU nurses, Beaumont Hospital-Taylor: April 28, 2015.
40. **Narayanan S:** Acute Ischemic Stroke Intervention, ED department meeting, Beaumont Hospital-Taylor: April 22, 2015.

## INVITED LECTURES (Continued)

### Local/Regional (Continued)

41. **Narayanan S:** Neurointerventional procedures, aneurysm coiling, and acute stroke intervention. In-service, Post-Anesthesia Care Unit (PACU) nurses, BH-D: March 25, 2015.
42. **Narayanan S:** Introduction to neuroangiography and neurovascular anatomy. In-service, Interventional Radiology/Electrophysiology staff, BH-D: March 25, 2015.
43. **Narayanan S:** Acute Ischemic Stroke In-Service for 3North Neuroscience nurses, Beaumont Hospital-Taylor: March 24, 2015.
44. **Narayanan S:** Neurointerventional procedures, aneurysm coiling, and acute stroke intervention. In-service, PACU nurses, BH-D: March 11, 2015.
45. **Narayanan S:** Acute Ischemic Stroke Treatment Pathways. Emergency Department meeting, BH-D: December 3, 2014.
46. **Narayanan S:** Acute Ischemic Stroke Intervention. Radiology Residents' Conference, BH-D: October 30, 2014.
47. **Narayanan S:** Intracranial aneurysms: diagnosis and treatment. Radiology Residents' Conference, BH-D. August 14, 2014.
48. **Narayanan S:** Coiling of ruptured intracranial aneurysm: case presentation. Endovascular Physician Practice Evaluation Committee meeting, BH-D: July 25, 2014.
49. **Narayanan S:** Acute stroke interventions: nursing responsibilities. Neuroscience series, BH-D: July 15, 2014.
50. **Narayanan S:** Overview of cerebral angiography: vascular anatomy. Neurology Residents' Conference, WSU: March 12, 2014.
51. **Narayanan S:** Neurointerventional Program Quality Metrics. Patient Experience Council, BH-D: February 25, 2014.
52. **Narayanan S:** MR imaging of stroke. Vascular Neurology conference, WSU: December 18, 2013.
53. **Narayanan S:** Acute stroke intervention: ED. Emergency Department meeting, BH-D: October 30, 2013.
54. **Narayanan S:** Triage and management of acute ischemic stroke. Internal medicine Department meeting, Beaumont Hospital-Taylor: September 4, 2013.
55. **Narayanan S:** Neurointerventional procedures. Certified registered nurse anesthetist meeting, BH-D: June 12, 2013.
56. **Narayanan S:** Neurointerventional procedures. Internal Medicine Department meeting, Beaumont Hospital-Trenton: May 28, 2013.
57. **Narayanan S:** Patterns of collateral circulation. Vascular Neurology Conference, WSU: May 22, 2013.
58. **Narayanan S:** Indications for cerebral/spinal angiography. Internal Medicine Department meeting, BH-D: May 3, 2013.
59. **Narayanan S:** Nursing/anesthesia considerations in interventional neuroradiology. Neuroscience series, BH-D: May 2, 2013.
60. **Narayanan S:** Indications for cerebral/spinal angiography. Neurology Residents web module recording, WSU: April 18, 2013.
61. **Narayanan S:** Neurointerventional procedures. In-service, Coronary Care Unit staff meeting, BH-D: April 4, 2013.
62. **Narayanan S:** Overview of Ischemic Stroke Transfers. Emergency Department Managers' meeting, Beaumont Hospital-Taylor: March 27, 2013.
63. **Narayanan S:** Neurointerventional procedures. In-service, Sinai-Grace Hospital cath lab staff meeting: March 21, 2013.

**INVITED LECTURES (Continued)**

**Local/Regional (Continued)**

64. **Narayanan S:** Indications for cerebral/spinal angiography. In-service, BH-D ICU staff meeting: March 8, 2013.
65. **Narayanan S:** Intracranial aneurysms: diagnosis and treatment. Neurology section meeting, St. John Macomb-Oakland Hospital: February 26, 2013.
66. **Narayanan S:** Acute stroke management. Emergency Department dinner meeting, Beaumont Hospitals-Dearborn/Wayne/Taylor/Trenton: February 13, 2013.
67. **Narayanan S:** Anesthetic considerations in the neuroangiography suite: Part I. Anesthesia Department meeting, BH-D: February 12, 2013.
68. **Narayanan S:** Vasospasm and mycotic aneurysms due to bacterial meningitis. Infectious Diseases conference, WSU: February 12, 2013.
69. **Narayanan S:** Introduction to neuroangiography. Neurology Residents' conference, WSU: February 6, 2013.
70. **Narayanan S:** Indications for Cerebral/Spinal Angiography. Rehabilitation Services Lecture Series, BH-D: November 14, 2012.
71. **Narayanan S:** Acute ischemic stroke. Radiology Residents' conference, Detroit Medical Center (DMC): October 24, 2012.
72. **Narayanan S:** Intracranial aneurysms: diagnosis and treatment. Radiology Residents' conference, DMC: October 10, 2012.
73. **Narayanan S:** Endovascular treatment of intracranial aneurysms. Neurosurgery Student Interest Group Meeting, WSU: October 5, 2012.
74. **Narayanan S:** Dural arteriovenous fistulas. Radiology Residents' Conference, DMC: September 5, 2012.
75. **Narayanan S:** Introduction to Neuroangiography. Radiology Residents' Conference, DMC: July 11, 2012.
76. **Narayanan S:** Transfemoral arterial access and management of complications. 3North Neuroscience series, BH-D, April 10, 2012.
77. **Narayanan S:** Indications for Cerebral Angiography. Neuroscience series, BH-D: March 6, 2012.
78. **Narayanan S:** Moderator, Michigan State Medical Society (MSMS) Symposium: Updates in Ischemic and Hemorrhagic Cerebrovascular Disease; Speaker: Endovascular treatment of intracranial aneurysms; Speaker: Endovascular Management of Acute Ischemic Stroke. October 28, 2011.
79. **Narayanan S:** Management of Epilepsy: Newly Diagnosed and When Treatments Fail: Wada Testing. Speaker, MSMS symposium: October 27, 2011.
80. **Narayanan S:** Endovascular Neurosurgery. Neurosurgery Student Interest Group meeting, WSU: September 16, 2011.
81. **Narayanan S:** Stroke for the General Internist. Internal Medicine Summer Lecture series, WSU: August 2, 2011.
82. **Narayanan S:** Patterns of Collateral Circulation. Vascular Neurology Conference, WSU: March 30, 2011.
83. **Narayanan S:** Board Review. Radiology Residents' Conference, DMC: March 16, 2011.
84. **Narayanan S:** ER Triage and Management of Acute Ischemic Stroke. Emergency Medicine meeting, St. Joseph Mercy Oakland Hospital: March 8, 2011.
85. **Narayanan S:** Magnetic Resonance Imaging for Stroke. Neurology Residents' Conference, WSU: January 26, 2011.
86. **Narayanan S:** Approach to interpretation of cerebral angiograms. Neurology Residents' Conference, WSU: January 5, 2011.

**INVITED LECTURES (Continued)**

**Local/Regional (Continued)**

87. **Narayanan S:** Moderator, MSMS: Updates in Ischemic and Hemorrhagic Cerebrovascular Disease; Speaker: Stroke in Young Adults; Speaker: Endovascular Management of Acute Ischemic Stroke. October 22, 2010.
88. **Narayanan S:** Aneurysmal Subarachnoid Hemorrhage. Internal Medicine Conference, St. Joseph Mercy Oakland Hospital: September 9, 2010.
89. **Narayanan S:** Stroke for the General Internist. Internal Medicine Summer Lecture Series, DMC: August 24, 2010.
90. **Narayanan S:** Posterior Circulation Strokes. Emergency Medicine Meeting, St. Joseph Mercy Oakland Hospital: June 15, 2010.
91. **Narayanan S:** Cellular and Vascular Pathophysiology of Stroke. Vascular Neurology conference, WSU: May 5, 2010.
92. **Narayanan S:** Moyamoya Disease. Harper University Hospital Physical/Occupational Therapy Conference: April 23, 2010.
93. **Narayanan S:** Board Review. Radiology Noon Conference, WSU: March 31, 2010.
94. **Narayanan S:** Introduction to Neuroangiography. Radiology Noon Conference, WSU: March 31, 2010.
95. **Narayanan S:** Ischemic Stroke. DMC CME: Dearborn Health and Wellness Program: March 27, 2010.
96. **Narayanan S:** Arterial Anatomy, AVMs & dAVFs. Neurology Residents' Conference, WSU: August 26, 2009.
97. **Narayanan S:** Stroke conference, Emory University Hospital (EUH). April 29, 2009.
98. **Narayanan S:** Indications for Cerebral Angiography. Neurology Residents' Conference, EUH: April 3, 2009.
99. **Narayanan S:** Introduction to Neuroangiography. Neurology Residents' Conference, EUH: April 3, 2009.
100. **Narayanan S:** Stroke Conference, EUH. February 25, 2009.
101. **Narayanan S:** Stroke Conference, EUH. January 28, 2009.
102. **Narayanan S:** Introduction to Neuroangiography: Anatomy, Aneurysms, AVMs, and DAVFs. Radiology Residents' Noon Conference, EUH: October 17, 2008.
103. **Narayanan S:** Stroke Conference, EUH. March 28, 2008.
104. **Narayanan S:** Neurology Jeopardy! Neurology Noon Conference, Grady Memorial Hospital: December 18, 2006.
105. **Narayanan S:** Neurological Localization: Application to Diagnostic Neuroradiology. Neuroradiology Fellows' Conference, EUH: September 12, 2006.
106. **Nathan S:** Woman with Post-operative Lower Extremity Weakness. Anesthesia Case Conference, Massachusetts General Hospital: April 6, 2006.
107. **Nathan S:** Morbidity & Mortality Conference, Neurointensive Care, Massachusetts General Hospital. November 24, 2005.
108. **Nathan S:** Morbidity & Mortality Conference, Neurointensive Care, Massachusetts General Hospital. August 25, 2005.
109. **Nathan S:** Midline Cleavage Defects & Neuronal Migrational Abnormalities. Pediatric Neurology Conference, Jackson Memorial Hospital (JMH): June 13, 2005.
110. **Nathan S:** Vertebrobasilar Dolichoectasia. Stroke Conference, JMH: February 28, 2005.
111. **Nathan S:** Neurology Jeopardy! Neurology Conference, JMH: February 7, 2005.
112. **Nathan S:** Anti-Epileptic Side Effects in Children. Pediatric Neurology Conference, JMH: December 13, 2004.

## **INVITED LECTURES (Continued)**

### **Local/Regional (Continued)**

113. **Nathan S:** Detect, Localize & Intervene: 21<sup>st</sup>-Century Neurology. Student Interest Group in Neurology Meeting: April 5, 2004.
114. **Nathan S:** Pediatric Neurology Jeopardy! Neurology Noon Conference, JMH: March 4, 2004.
115. **Nathan S:** Neurology Jeopardy! Neurology Noon Conference, JMH: March 1, 2004.
116. **Nathan S:** Thrombolytics in Cerebrovascular & Cardiovascular Disease. Stroke Conference, JMH: September 9, 2003.
117. **Nathan S:** Metastatic Brain Tumors. Neurology Conference, JMH: September 20, 2002.

### **Invited Seminars and Grand Rounds**

1. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: January 3, 2018.
2. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: December 20, 2017.
3. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: November 1, 2017.
4. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: October 4, 2017.
5. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: September 6, 2017.
6. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: August 30, 2017.
7. **Narayanan S:** Pediatric Ischemic/Hemorrhagic Stroke and Cerebral angiography, WSU: August 30, 2017.
8. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: July 5, 2017.
9. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: May 17, 2017.
10. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: April 5, 2017.
11. **Narayanan S:** CODE STROKE! Acute ischemic stroke intervention: Stroke case presentations, Neurosurgery Grand Rounds, WSU: March 29, 2017.
12. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: March 1, 2017.
13. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: February 1, 2017.
14. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: January 4, 2017.
15. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: November 2, 2016.
16. **Narayanan S:** CODE STROKE: Emergent treatment of acute ischemic stroke. Internal Medicine Grand rounds, Sinai-Grace Hospital: October 6, 2016.
17. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: September 7, 2016.
18. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: August 3, 2016.
19. **Narayanan S:** Vascular Malformations. Neurosurgery Grand Rounds, WSU: August 3, 2016.
20. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: July 6, 2016.
21. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: June 15, 2016.
22. **Narayanan S:** Acute Ischemic Stroke Intervention: How Can We Do Better?. Grand Rounds, Beaumont Hospital-Dearborn: May 17, 2016.
23. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: May 4, 2016.
24. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: April 6, 2016.
25. **Narayanan S:** Neuroendovascular Jeopardy! Neurosurgery Grand Rounds, WSU: March 9, 2016.
26. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: February 3, 2016.



**INVITED LECTURES (Continued)**

***Invited Seminars and Grand Rounds (Continued)***

27. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: January 6, 2016.
28. **Narayanan S:** Acute ischemic stroke treatment paradigms in 2015. Internal Medicine Grand Rounds, Oak Hill Hospital, Brooksville, Florida: December 9, 2015.
29. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: November 11, 2015.
30. **Narayanan S:** Treatment of acute ischemic stroke. Neurosurgery Grand Rounds, WSU: October 7, 2015.
31. **Narayanan S:** Acute ischemic stroke treatment paradigms in 2015. Neurology Grand Rounds, WSU: September 11, 2015.
32. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: September 1, 2015.
33. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: August 5, 2015.
34. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: May 6, 2015.
35. **Narayanan S:** Acute Stroke Treatment Paradigms in 2015. Grand Rounds, Beaumont Hospital-Dearborn: April 29, 2015.
36. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: April 1, 2015.
37. **Narayanan S:** Embolization of head and neck tumors. Otolaryngology Grand Rounds, WSU: April 1, 2015.
38. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: March 4, 2015.
39. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: February 4, 2015.
40. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: January 7, 2015.
41. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: November 5, 2014.
42. **Narayanan S:** Intracranial atherosclerosis. Neurosurgery Grand Rounds, WSU: July 16, 2014.
43. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: July 16, 2014.
44. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: June 4, 2014.
45. **Narayanan S:** Internal carotid artery aneurysms. Neurosurgery Grand Rounds, WSU: April 16, 2014.
46. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: April 9, 2014.
47. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: March 12, 2014.
48. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: January 8, 2014.
49. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: December 18, 2013.
50. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: November 13, 2013.
51. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: October 2, 2013.
52. **Narayanan S:** Neurointerventional procedures in trauma patients. Surgery Grand Rounds, Sinai-Grace Hospital: May 2, 2013.
53. **Narayanan S:** Embolization of head and neck tumors. Otolaryngology Grand Rounds, WSU: April 17, 2013.
54. **Narayanan S:** Spinal vascular malformations: diagnosis and treatment. Neurology Grand Rounds, WSU: April 5, 2013.
55. **Narayanan S:** Endovascular treatment of spinal vascular malformations. Neurosurgery Grand Rounds, WSU: April 3, 2013.
56. **Narayanan S:** Intracranial Aneurysms: diagnosis and treatment. Spring CME meeting, Michigan Association of Physicians from India: March 17, 2013.

**INVITED LECTURES (Continued)**

***Invited Seminars and Grand Rounds (Continued)***

57. **Narayanan S:** Stroke Overview. Plenary session, 2013 Take Heart Nursing Symposium: March 4, 2013.
58. **Narayanan S:** Neuroendovascular Jeopardy! Neurosurgery Grand Rounds, WSU, Vascular Conference: February 13, 2013.
59. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: January 9, 2013.
60. **Narayanan S:** Anesthetic considerations in interventional neuroradiology. Anesthesiology Grand Rounds, WSU: January 9, 2013.
61. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: November 14, 2012.
62. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: September 9, 2012.
63. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: May 23, 2012.
64. **Narayanan S:** Vascular Conference. Neurosurgery Grand Rounds, WSU: April 18, 2012.
65. **Narayanan S:** Neuroendovascular Jeopardy! Neurosurgery Grand Rounds, WSU: September 21, 2011.
66. **Narayanan S:** Cerebral Venous Thrombosis. Neurology Grand Rounds, WSU: June 3, 2011.
67. **Narayanan S:** Improving patient education for acute ischemic stroke. AKMG Michigan Regional CME meeting, Birmingham, MI: May 21, 2011.
68. **Narayanan S:** Endovascular management of the SAH patient. Neurosurgery Grand Rounds, WSU: October 6, 2010.
69. **Narayanan S:** Endovascular Management of dAVFs. Neurology Grand Rounds, WSU: April 2, 2010.
70. **Narayanan S:** Endovascular Therapy for Stroke Prevention and Treatment. Michigan Neurological Association Winter Conference: March 6, 2010.
71. **Narayanan S:** Neuroendovascular Jeopardy! Neurosurgery Grand Rounds, WSU: February 24, 2010.
72. **Narayanan S:** Neuroendovascular Jeopardy! Neurosurgery Grand Rounds, WSU: February 17, 2010.
73. **Narayanan S:** Mock Boards/dAVF cases. Neurosurgery Grand Rounds, WSU: February 3, 2010.
74. **Narayanan S:** Endovascular Management of dAVFs. Neurosurgery Grand Rounds, WSU: February 3, 2010.
75. **Narayanan S:** Inferior Petrosal Sinus Sampling. Endocrinology Grand Rounds, WSU: November 11, 2009.
76. **Narayanan S:** Endovascular treatment of dural arteriovenous fistulas. Neurosurgery Grand Rounds, Loyola University Medical Center: November 12, 2008.
77. **Narayanan S:** Platelet Function and Testing: Application to Neuroendovascular Procedures. Neurosurgery Grand Rounds, Emory University Hospital: January 10, 2008.
78. **Nathan S:** Contribution of Microemboli to Cerebral Ischemia in Aneurysmal Subarachnoid Hemorrhage. Neurology Grand Rounds, JMH: February 11, 2005.
79. **Nathan S:** Ward Case Presentation. Neurology Grand Rounds, JMH: November 12, 2004.
80. **Nathan S:** Morvan's Fibrillary Chorea. Neurology Grand Rounds, JMH: April 25, 2003.
81. **Nathan S:** Clinico-Pathologic Correlation. Neurology Grand Rounds, JMH: November 1, 2002.