

CURRICULUM VITAE

Ramin Zand, MD, MPH, FAHA

October 2024

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Department of Neurology, Pennsylvania State University
Former Chair of Great River Affiliate (five States) Stroke Task Force, American Heart Association

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NCBI: <https://www.ncbi.nlm.nih.gov/myncbi/1BssseEXduo55/bibliography/public/>

Google Scholar: <https://scholar.google.com/citations?user=cdOmr24AAAAJ&hl=en>

Loop: <https://loop.frontiersin.org/people/354810/overview>

BIOGRAPHY

Dr. Zand received his medical doctorate with honors from Iran University in 2000. During his tenure as a medical student, he co-founded a student research committee aimed at fostering a culture of research and innovation among his peers. Shortly after graduating, he assumed the role of research director within a healthcare network in Tehran. His desire for scholarly activities was further acknowledged through the acquisition of a scholarship, enabling him to pursue an advanced degree in public health and epidemiology. In 2002, Dr. Zand relocated to Canada to join his mentor at the University of Toronto. His time in Canada proved to be transformative, as he actively engaged in numerous research initiatives. Notably, he founded the International Institute of Health Studies, a not-for-profit group dedicated to establishing collaborative programs between Canadian health research institutions and countries with limited healthcare resources. Supported by the Canadian parliament, Dr. Zand subsequently undertook the ambitious task of designing a preventive health network in Juba, Southern Sudan, earning commendation from the elected president in 2006. Prior to transitioning to the field of neurology, he was involved in policymaking and risk assessment within the Public Health Agency of Canada. In 2008, he secured government funding to investigate mental health disparities among young immigrants in Canada, demonstrating his commitment to advancing the understanding of disparities in healthcare.

During his Neurology residency at the University of Tennessee, Dr. Zand actively engaged in patient care and scholarly activities. His dedication earned him the position of chief resident, where he played an instrumental role in advancing the residency and stroke programs. Dr. Zand's pursuit of further specialization led him to a unique fellowship opportunity at the National Institute of Health (NIH), where he gained experience in vascular neurology and neuroimaging. He was selected as one of the SPOTRIAS fellows, an exclusive program focused on specialized programs of translational research in acute stroke.

Beyond his proficiency in Neurology, Dr. Zand holds board certifications in Vascular Neurology and Neuroimaging, underscoring his expertise in these specialized areas. Currently, he is a Professor of Neurology at the Pennsylvania State University. In this capacity, he continues to make significant contributions to the fields of research, teaching, and quality improvement, all while delivering exceptional care to his patients. Dr. Zand's accomplishments extend beyond academia, as he has made significant strides in healthcare administration and program development. As the former director of the stroke program at Geisinger, he spearheaded the establishment of the first JC-accredited comprehensive stroke program in northeast Pennsylvania in 2018. Moreover, he created an acute neurology clinic with the pivotal mission of safely and effectively managing acute neurological conditions through a walk-in clinic model. Dr. Zand's commitment to expanding access to specialized care is further exemplified by his active involvement in the expansion of a telestroke program at Geisinger. Drawing from his experiences in four countries with different healthcare systems and policies, Dr. Zand has gained insights into the strengths and limitations of various healthcare models.

Dr. Zand's dedication to education and mentorship is evident through his active engagement in teaching and mentoring medical students, residents, and fellows. He was the former chair of the Great River Affiliate Stroke Task Force, where he directed and provided consultations to multiple health systems across five northeastern states. In this capacity, he contributed to public policy initiatives to expand stroke center designations and regional stroke registries while actively engaging families and stroke survivors through initiatives such as "You're the Cure and Patient Support Network." Dr. Zand's dedication to fostering diverse and inclusive healthcare initiatives is further highlighted by his engagement with multicultural markets through Target: BP™ and AHA educational programs. Dr. Zand's professional affiliations and memberships further illustrate his standing in the field, including his membership in the American Academy of Neurology, the European Stroke Organization, the World Stroke Organization, and the International Stroke Genetics Consortium. He was elected President and Mission Chair of the AHA Northeast Pennsylvania in 2018.

As a dedicated physician-scientist, Dr. Zand seamlessly integrates his passion for research with his commitment to patient care. His exceptional patient satisfaction record earned him recognition in leadership in 2019 and 2020. He has been actively involved in numerous cutting-edge research studies, focusing on leveraging big data and AI for stroke diagnosis and outcome prediction. Additionally, his research explores the intricate system of stroke care, as well as the genetic factors contributing to stroke. Through his research program, Dr. Zand has mentored several postgraduate students, nurturing the next generation of researchers in the field. He has received awards from NIH (R01NS128986 and R01NS131554), foundations, and industries. He has been the editor and ad hoc reviewer of multiple scientific journals and has authored more than 180 journal articles and five book chapters. His research has received over 20,000 citations (H-index:50, Google Scholar, 10/30/2024).

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A. EDUCATION AND TRAINING

A.1. Education and Postdoctoral Training

- 2012 – 2013 Stroke/Vascular Neurology Fellowship, National Institute of Health (NIH), Bethesda, Maryland, United States
- 2012 – 2013 Specialized Programs of Translational Research in Acute Stroke (SPOTRIAS) Fellowship, Boston, Massachusetts, United States
- 2009 – 2012 Residency, Department of Neurology, The University of Tennessee Health Science Center, Memphis, Tennessee, United States
- 2008 – 2009 Internship, Department of Medicine, The University of Tennessee Health Science Center, Memphis, Tennessee, United States
- 2003 – 2004 Postgraduate Certificate Program, Epidemiologic Study Design and Data Analysis, Professional Advanced Services, Toronto, Ontario, Canada
- 2001 – 2002 Master of Public Health (MPH), Tehran University of Medical Sciences, Tehran, Iran
- 1998 – 2000 Internship, Departments of Medicine and Surgery, Iran University of Medical Sciences, Tehran, Iran
- 1993 – 2000 Doctor of Medicine (MD), Iran University of Medical Sciences, Tehran, Iran

A.2. Selected Continuing Education and Certificate Programs

Accelerating Innovation in Precision Medicine, Executive Education Harvard Business School, Boston, Massachusetts, United States
October 23-25, 2019

Lean for Healthcare, CallisonRTKL, Danville, Pennsylvania, United States
August 28-30, 2018

Education and Hands-on Training, BOTOX® (onabotulinumtoxinA) for Upper and Lower Limb Spasticity, Paoli, Pennsylvania, United States
October 18, 2017

St. Jude Medical's AMPLATZER™ PFO Occluder Workshop, Columbia Presbyterian, New York, New York, United States
June 12-13, 2017

Neuroradiology and Head and Neck Radiology Post Graduate Course, Massachusetts General Hospital Massachusetts, Eye and Ear Infirmary Departments of Radiology Harvard Medical School, Cambridge, Massachusetts, United States
September 15-19, 2014

Neurovascular Ultrasound (Carotid Ultrasound and Transcranial Doppler), Wake Forest Baptist Medical Center, Winston-Salem, North Carolina, United States
November 5-9, 2012

Magnetic Resonance Imaging Reader, MR WITNESS trial: A Study of Intravenous Thrombolysis With Alteplase in MRI-Selected Patients – NINDS, National Institute of Health, Bethesda, Maryland, United States
November 18-19, 2012

Computer-based Clinical Research Training Course, NIH Office of Clinical Research Training and Medical Education, National Institute of Health, Bethesda, Maryland, United States
August 1-2, 2012

Botox for Chronic Migraine Patients, Live Injection Training Workshop – Methodist University Hospital & Wesley Neurology, Memphis, Tennessee, United States
May 11, 2012

Activa Focus on Common Movement Disorder, Medtronic Neuromodulation, Medtronic Inc, Chicago, Illinois, United States
October 10-18, 2009

Fundamental Critical Care Support (FCCS), Society of Critical Care Medicine, Veterans Administration Hospital, Memphis, Tennessee, United States
September 9, 2009

Foundations of Financial Accounting, Algonquin College, Ottawa, Ontario, Canada
April 1- September 15, 2005

PCR: The Basics of the Polymerase Chain Reaction, Tehran University of Medical Sciences, Tehran, Iran
August 2-7, 1997

SPSS and Statistical Methods for Physician Scientists, Iran University of Medical Sciences, Tehran, Iran
July 12 -28, 1997

Research Methodology and Epidemiological Studies, Iran University of Medical Sciences, Tehran, Iran
September 11-18, 1996

A.3. Board and Professional Certifications

Neuroimaging, United Council for Neurologic Subspecialties (UCNS)	2015
Vascular Neurology, American Board of Psychiatry and Neurology (ABPN)	2014
Neurology, American Board of Psychiatry and Neurology (ABPN)	2012
Medical Council of Canada Evaluating Examination (MCCEE)	2008
Educational Commission for Foreign Medical Graduates (ECFMG) Board Certificate	2007

A.4. Analytical Skills

Finances in a Service Line Model, System Dynamics, and Scorecard Concept and Design, Lean Process
Advanced Statistics and Machine Learning Techniques as well as Pattern Recognition Methods

Feature Selection, Basics Of Imputation And Natural Language Processing

A.5. Education Scholarships and Awards

American Academy of Neurology (AAN) – Resident Scholarship	2012
Professional Advanced Services (PAS) Postgraduate Scholarship Award	2003

B. EMPLOYMENT AND WORK HISTORY

B.1. Employment

- 03/2022 – present Professor of Neurology, Department of Neurology, Pennsylvania State University and PennState Health, Pennsylvania, United States
Involved in building a research program within the neuroscience institute. Heavily involved in teaching, patient care, and quality improvement. Serving in multiple committees including Committee on Appointments and Promotions.
- 03/2019 – 03/2022 Interim Research Director, Geisinger Neuroscience Institute, Danville, Pennsylvania, United States
Review plans and confer with neuroscience research staff; Increase capacity for research through team building, collaborations, and communications; Mentoring students, research fellows, and juniors faculties; Evaluating the applications for small internal research grants; Present the institution in Institutional Review Board (IRB); Monitoring and balancing the research budget.
- 07/2016 – 07/2021 Stroke Director, Geisinger Health System, Pennsylvania, United States
*Organization of stroke care and develop treatment protocols, management standards, and expectations; Earned (2019) and has maintained Joint Commission certification for a comprehensive stroke center and two primary stroke centers; Educational and medical support of nursing care; Coordinate and supervise quality measures including performance improvement, quality initiatives, and peer review; Constantly re-evaluate care maps to provide cost-efficient care; Participate in a leadership role in the hospital and community; Expanding telehealth; Develop research and innovative programs (Transient Ischemic Attacks [TIA] clinic: *Front Neurol.* 2019; 10: 294; *eNeurologicalSci.* 2019 May 16;15:100193; *BMC Med Inform Decis Mak.* 2020 Jun 18;20(1):112.; *Fast-Track Long Term Continuous Heart Monitoring: Front Neurol.* 2020 Jan 21;10:1400; *Blood Pressure Clinic, Bioness clinic, Spasticity clinic*).*
- 07/2017 – 03/2022 Principal Investigator, Geisinger Health System, Pennsylvania, United States
Involved in several research studies and cutting-edge projects that involve big data and the development of machine-learning-enabled clinical decision support systems for stroke diagnosis and outcome prediction; System of care and patients management; TIA management; Polygenic and monogenic causes of stroke; Directing my lab (thedecodelab.com) with two scientists, one programmer, two postdoctoral fellows, and two students. Received more than 3 million dollars in direct funding since 2018.
- 07/2016 – 03/2022 Attending Physician, Neurology Department, Geisinger Health System, Pennsylvania, United States
- 12/2015 – 06/2016 Stroke Program Director, Health South Rehabilitation Center, Memphis, Tennessee, United States
- 07/2013 – 06/2016 Attending Physician, University of Tennessee-Methodist Physicians, Memphis, Tennessee, United States
- 07/2012 – 06/2013 Clinical Fellow, Division of Stroke Diagnostics, National Institute of Health (NIH), Bethesda, Maryland, United States
- 06/2011 – 06/2012 Administrative Chief Resident, Department of Neurology, The University of Tennessee Health Science Center, Memphis, Tennessee, United States

07/2009 – 06/2012	Resident Physician, Department of Neurology, The University of Tennessee Health Science Center, Memphis, Tennessee, United States
06/2008 – 06/2009	Intern, Department of Medicine, The University of Tennessee Health Science Center, Memphis, Tennessee, United States
11/2007 – 06/2008	Senior Public Health Officer, Global Public Health Intelligence Network, Center for Emergency Preparedness and Response Public Health Agency of Canada, Ottawa, Ontario, Canada
08/2004 – 06/2008	Founder and Director, the International Institute of Health Studies (IIHS), Ottawa, Ontario, Canada
09/2002 – 06/2004	Research Associate, Center for Addiction and Mental Health (CAMH), University of Toronto, Toronto, Ontario, Canada
10/2001 – 09/2002	Research Director, Shahriar Health Center, Iran University of Medical Sciences and Health Services, Tehran, Iran
11/2000 – 10/2001	Primary Care Provider and Research Consultant, Shahriar Health Center, Iran University of Medical Sciences and Health Services, Tehran, Iran

B.2. Academic Appointments

08/2021 – present	Professor, Department of Neurology, Department of Neurology, University of Tennessee Health Science Center and Pennsylvania State University, United States
07/2018 – present	Associated faculty, Neuroendovascular Surgery Fellowship, Department of Neurosurgery, Geisinger, Danville, Pennsylvania, United States
09/2017 – 08/2021	Associate Professor, Department of Medicine, Geisinger Commonwealth School of Medicine, Scranton, Pennsylvania, United States
02/2017 – 08/2021	Associate Professor, Department of Neurology, University of Tennessee Health Science Center, Memphis, Tennessee, the United States
07/2016 – 03/2022	Investigator II, Geisinger Health System, Pennsylvania, United States
09/2015 – 07/2019	Visiting Scholar, Biocomplexity Institute, Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, Virginia, United States
07/2013 – 01/2017	Assistant Professor, Department of Neurology, University of Tennessee Health Science Center, Memphis, Tennessee, United States
11/2006 – 06/2008	Associate Scientist and Lecturer, Center for Research on Inner City Health at St. Michael's Hospital, University of Toronto, Toronto, Ontario, Canada

B.3. Medical Licensure

New Jersey Board of Medicine, Full License in Medicine and Surgery

2022 – 2024

New York Board of Medicine, Full License in Medicine and Surgery	2022 – 2023
Arkansas Board of Medicine, Full License in Medicine and Surgery	2022 – 2023
Ohio Board of Medicine, Full License in Medicine and Surgery	2017 – 2024
Pennsylvania Board of Medicine, Full License in Medicine and Surgery	2016 – present
Virginia Board of Medicine, Full License in Medicine and Surgery	2015 – 2024
Mississippi Board of Physicians, Full License in Medicine and Surgery	2014 – 2023
Tennessee Board of Physicians, Full License in Medicine and Surgery	2013 – 2023
Maryland Board of Physicians, Full License in Medicine and Surgery	2012 – 2013
District of Columbia Board of Medicine, Full License in Medicine and Surgery	2012 – 2014
Virginia Board of Medicine, Training License in Medicine and Surgery	2013

B.4. Security Clearances

Confidential, Department of Defense, United States	2012 – 2013
Top Secret (Level III); Canadian Government	2007

B.5. Hospital Affiliations

Penn State Health Holy Spirit Medical Center, Pennsylvania, United States – Attending Physician, Adult Neurology, Vascular Neurology	2022 – present
Penn State Health St. Joseph Medical Center, Pennsylvania, United States – Attending Physician, Adult Neurology, Vascular Neurology	2022 – present
Penn State Health Hampden Medical Center, Pennsylvania, United States – Attending Physician, Adult Neurology, Vascular Neurology	2022 – present
Hershey Medical Center, Pennsylvania, United States – Attending Physician, Adult Neurology, Vascular Neurology	2022 – present
Evangelical Community Hospital, Pennsylvania, United States – Attending Physician, Adult Neurology, Vascular Neurology	2021 – 2023
Geisinger Health System, Pennsylvania, United States – Attending Physician, Adult Neurology, Vascular Neurology, and Neurocritical Care	2016 – 2023
Chesapeake Regional Medical Center, Chesapeake, Virginia, United States – Attending Physician, Adult Neurology, and Vascular Neurology	2015 – 2023
Bon Secours Health System, Richmond, Virginia, United States – Attending Physician, Adult Neurology, and Vascular Neurology	2014 – 2018
Baptist Health System, Tennessee, United States – Attending Physician, Adult Neurology and Vascular Neurology	2014 – 2023
HealthSouth, Memphis, Tennessee, United States – Attending Physician, Adult Neurology, and Vascular Neurology	2014 – 2016

Regional One Medical Center, Memphis, Tennessee, United States – Attending Physician, Adult Neurology, Vascular Neurology, and Neurocritical Care	2013 – 2016
Methodist University Hospital, Memphis, Tennessee, United States – Attending Physician, Adult Neurology, Vascular Neurology, and Neurocritical Care	2013 – 2016
Inova Fairfax Hospital, Fairfax, Virginia, United States – Clinical Fellow, Neurocritical Care	2013
Washington Hospital Center, Washington District of Columbia, United States - Clinical Fellow, Vascular Neurology	2012– 2013
John Hopkins Medicine - Suburban Hospital, Bethesda, Maryland, United States - Clinical Fellow, Vascular Neurology	2012 – 2013

B.6. Board and Committee Membership

Advisor, The Janssen and BMS Global, Cardiovascular team	2022– present
Fellow, Stroke Council, American Heart Association/American Stroke Association, United States	2021– present
President, American Heart Association/American Stroke Association, Northeast Board, Pennsylvania, United States	2020 – 2023
<i>Lead the board and be a spokesperson for its members. Support and guide the Fulfillment of the aims and objectives of the board and the American Heart Association. Present our mission and engage multi-cultural markets.</i>	
Chair, Great River Affiliate (GRA) Stroke Task Force, American Heart Association/American Stroke Association, United States	2018 – 2019
<i>Planned, directed, and provided consultations to several health systems and hospitals in our five-state affiliates (Pennsylvania, West Virginia, Kentucky, Ohio, and Delaware); Involved in public policy to expand stroke center designation and stroke registries in the affiliates; Directed activities to engage families and stroke survivors in “You’re the Cure and Patient Support Network”; Involved in engaging multi-cultural markets in Target: BP™ and our educational programs; Involved Stroke House Bill 464 in Ohio to recognize stroke centers and establish stroke protocols</i>	
President-elect and Mission Chair, American Heart Association/American Stroke Association, Northeast Board, Pennsylvania, United States	2018 – 2023
Committee Member, Health Equity Group, Geisinger Commonwealth School of Medicine, Center of Excellence for Diversity and Inclusion, Scranton, Pennsylvania, United States	2018 – 2021
Committee Member, Five Star Steering Committee, Geisinger Community Medical Center, Scranton, Pennsylvania, United States	2018 – 2021
Committee Member, American Heart Association/American Stroke Great River Affiliate Health Strategies Committee, United States	2016 – 2018
Board Member, American Heart Association/American Stroke Association Northeast Pennsylvania Board, Pennsylvania, United States	2016 – 2023
Committee Member, American Heart Association/American Stroke Association Great River Affiliate Stroke Task Force Committee, United States	2016 – 2018
Board Member, Geisinger Health System Institutional Review Board (IRB), Danville, Pennsylvania, United States	2016 – 2021

Chair, Multidisciplinary Stroke Program Improvement, and Peer Review and Quality Improvement Committees, Geisinger Wyoming Valley Medical Center, Wilkes-Barre, Pennsylvania, United States	2016 – 2020
Chair, Multidisciplinary Stroke Program Improvement, and Peer Review and Quality Improvement Committee, Geisinger Community Medical Center, Scranton, Pennsylvania, United States	2016 – 2020
Advisory Board Member, Genentech, San Francisco, California, United States	2016 – 2017
Board Member, University of Tennessee Institutional Review Board (IRB), Memphis, Tennessee, United States	2013 – 2016
Founder and Member of Board of Director, the International Institute of Health Studies, Ottawa, Ontario, Canada	2004 – 2010
Co-funder and Member of Board of Director, Student Research Committee, Iran University of Medical Sciences and Health Services, Tehran, Iran	1995 – 1997

B.7. Professional Society Membership

Society to Improve Diagnosis in Medicine (SIDM), United States	2019 – present
American Society of Human Genetics (ASHG), United States	2019 – 2022
World Stroke Organization (WSO), Geneva, Switzerland	2015 – present
European Stroke Organization (ESO), Basel, Switzerland	2014 – present
American Heart Association/American Stroke Association (AHA/ASA), United States	2011 – present
American Academy of Neurology (AAN), United States	2010 – present

B.8. Editorial Board Membership

Editorial Roles:

Editor, Frontiers in Neurology, Lausanne, Switzerland	2021 – present
Guest Editor, Frontiers Public Health, Lausanne, Switzerland	2021 – present
Guest Editor, Journal of Clinical Medicine, MDPI, Basel, Switzerland	2020 – present
Guest Editor, Frontiers in Neurology, Lausanne, Switzerland	2019 – 2021

Editorial Board Member:

Brain Sciences, MDPI, Basel, Switzerland	2020 – present
International Journal of Mental Health and Addiction, Toronto, Ontario, Canada	2003 – 2004

Ad Hoc Reviewer: Circulation, The Lancet Public Health, JAMA Neurology, Annals of Neurology, Neurology, Stroke, Journal of Neuroimaging, BMC Neurology, Journal of Neuroimaging, Neurocritical Care, Medical Principles and Practice, the International Journal of the Health Sciences Center of Kuwait University, International Stroke Conference, American Heart Association, Dysphagia, International Journal of Mental Health and Addiction, The Journal of Social Sciences and Medicine, Quantitative Imaging in Medicine and

Surgery, European Journal of Pharmacology, Journal of NeuroInterventional Surgery, Cerebrovascular Diseases, Frontier Neurology, BMC Medicine, BMC Neurology, JAHA: Journal of the American Heart Association, Scientific Reports

B.9. Other Professional Affiliations and Activities

Peer reviewers for grant applications, American Heart Association, United States	2024 – present
Peer reviewers for grant applications, Qatar National Research Fund (QNRF), Doha, Qatar	2021 – present
Peer reviewers for grant applications, Fondazione Cariplo Foundation, Milan, Italy	2021 – present
Consultant, 2nd.MD, Houston, Texas, United States	2020 – present
Consultant, The Faucet - Artificial Intelligence Diagnostic for Neurological Emergencies, California, United States	2018 – 2022
Consultant, Patronus Neurology (Emergency Tele-neurology Service), United States	2016 – 2024
Consultant, Parexel International, LLC, Waltham, Massachusetts, United States	2014
Consultant, CVPIA Lab, Department of Electrical and Computer Engineering, University of Memphis, Memphis, Tennessee, United States	2009 – 2015
Consultant, Community Development, and Cross-Cultural Education Program/Community Research Capacity Enhancement Program, Ottawa Community Immigrant Services Organization (OCISO) and Center for Addiction and Mental Health (CAMH), Ottawa Ontario, Canada	2007 – 2009
Scientific and Medical Team Member, EmdAde AIDS, Vienna, Austria	2004 – 2006

B.10. Community and Overseas Volunteering

Health Equity Group, Diversity, and Inclusion Center of Excellence, Geisinger Commonwealth School of Medicine	2017 – 2022
American Heart Association, Local and Regional, United States	2016 – present
Iranian American Association of Memphis, Memphis, Tennessee, United States	2008 – 2012
Southern Sudan Health Development Project – Project Development, Parliament of Canada, International Institute of Health Studies, and Canadian Friends of Sudan	2006 – 2008
Books with Wings - University level books collection for targeted developing countries – Volunteer, University of Alberta, University of Ottawa, International Institute of Health Studies, Canadian Armed Forces, United States of Africa, and Canadian Friends of Sudan	2006 – 2008

B.11. Employment Awards and Recognitions

Geisinger, Years of Service and Work Anniversary Award	2021
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Geisinger, Chief Patient Experience Officer– Letter of Recognition, Patient Experience, Placed in the top 10 percent in the country	2019 & 2020
Team Award, American Heart Association/American Stroke Association - Stroke Gold Plus Award Quality Achievement Award with Target: Stroke Elite Plus, Stroke Team, Geisinger Community Medical Center, Scranton, Pennsylvania, United States	2017 – 2020
Team Award, American Heart Association/American Stroke Association - Stroke Gold Plus Award Quality Achievement Award with Target: Stroke Elite, Stroke Team, Geisinger Wyoming Valley Medical Center, Wilkes-Barre, Pennsylvania, United States	2018 – 2020
Team Award, American Heart Association/American Stroke Association - Stroke Gold Plus Quality Achievement Award with Target: Stroke Honor Roll, Stroke Team, Geisinger Wyoming Valley Medical Center, Wilkes-Barre, Pennsylvania, United States	2017
The University of Juba, Office of President – Letter of Recognition, Books with Wing project. Juba, Southern Sudan	2012
Award of Excellence in Primary Prevention and Promoting Public Health, Shahriar Health Center, Iran University of Medical Sciences and Health Services, Tehran, Iran	2001

C. TEACHING AND MENTORSHIP

C.1. Training and Mentoring

Training and Mentoring –Vascular Neurology and Neurocritical Care Fellowship

University of Tennessee Health Science Center, Memphis, Tennessee, United States: Rohini Bohle, Robert Walter Gilbert, Aboibaker Gum Sharaf, Katherine Nearing, Nitin Goyal

Pennsylvania State University, Hershey, Pennsylvania, United States: Kelsey Coleman

Training and Mentoring – Neurology Residency Program

Pennsylvania State University, Hershey, Pennsylvania, United States: Evan Hodge, Omolara Lawal, Sarah Mauney, Zahir Sheikh, Pavitra Srinivasan, Adrienne Stout, Benjamin Bird, Michelle Calmet, Nader El Seblani, Justine Julien, Sargun Walia, John Cavendish, Papul Chalia, Jacob Esper, Tyler Harte, Lydia Kauffman, Sepideh Allahdadian, Patrick Bergquist, Durgesh Chaudhary, Aatqa Memon, Jordan Yaukey, Shima Shahjouei.

Geisinger Health System, Danville, Pennsylvania, United States: Carolina Vivar, Narendra Kala, Sankeerth Challagundla, Evin Bender, Alyssa Cuchanski, Mathieu Cuchanski, Shivakrishna Kovi, Ahmad Iqbal, Dana Vanino, Varun Pulakanti, Faraz Majeed, Taimur Malik, Tyler West, Christopher Whiting, Alexandru Olaru, Micaela R. Owens, John Herbst, Stephanie L. Wyrostek, Eric J. Veloso, Erica Lewis, Joseph Seemiller, Micaela Owens, Caroline Johnssen, Alyssa Smith, Matthew Hart, Sandeep Gill, Christopher Houck, Mohammed Ali Abdulqader, Iqra Choudhry, Sukhraj Gill, Stacey Main, Mikki Sapkota.

University of Tennessee Health Science Center, Memphis, Tennessee, United States: Aboubakar Gum Sharaf, Sushma Bellamkonda, Ameer Alwafai, Georgy Cherkassky, Christopher Collins, Derek Bauer, Heather Horton, Ling Zhang, Shailesh Shivaj Male, Marianna Rivas Coppola, Mercedes Bello, Muthu Deep Vignesh Bhaskaran, Carter C. Nazor, Nitin Goyal, Sunitha Lena Nune, Amy Law Patterson, Roy Rashmoni, Syed Sabir, Sana Siddiqi, Lihong Shen, Sulaiman Iftikhar, Olivia Yambem, Yasser Khorchid, Yu Zhao, Praneetha Arge, Ali Kerro, Abhi Pandhi, Mantinderpreet Singh, April Wright

Training and Mentoring – Advanced Practitioner Nursing Program

Pennsylvania State University, Hershey, Pennsylvania, United States: Nicholas Splitt, Justin Lowe, Heather Abdalla, Gwendolyn Collier

Geisinger Health System, Danville, Pennsylvania, United States: Rashi K. Harjai, Laura L Fierke, D’Andrea Lindbuchler, Erin VandenBerg, Catherine Notchick, Sasha Marino

University of Tennessee Health Science Center, Memphis, Tennessee, United States: Kristy S. Winter, Victoria Swatzell, Josiah Newton, Alison McLoughlin, Sheeba Philip

Training and Mentoring – Stroke Research Fellowship, Postdoctoral, and Internship

Postdoctoral Research Fellows – Pennsylvania State University, Hershey, Pennsylvania, United States:

Alireza Vafaei Sadr, PhD (2023 – present) – Project: (1) Prediction of Risk of Recurrence After Ischemic Stroke Using Machine Learning Methods, (2) Prediction of atrial fibrillation based on big data.

Postdoctoral Research Fellows - Geisinger Health System, Danville, Pennsylvania, United States:

Durgesh Chaudhary, MD (2019 – 2021) – Project: (1) Prediction of Risk of Recurrence After Ischemic Stroke Using Machine Learning Methods, (2) Geisinger NeuroScience Ischemic Stroke (GNSIS) database

Ayesha Khan, MD (2019 – 2020) – Project: (1) Innovative Screening Tool for Stroke in Emergency Department Using Machine Learning Algorithms, (2) Geisinger NeuroScience Ischemic Stroke (GNSIS) database

Shima Shahjouei, MD, MPH (2019 – 2021) – Project: (1) TIA prediction modeling and outcome (2) COVID-19 and Stroke

Stroke Research Fellows - Geisinger Health System, Danville, Pennsylvania, United States:

Alireza Sadighi, MD (2016 – 2020) – Projects: (1) An Intuitive Tool for Risk Stratification of Transient Ischemic Attack in the Emergency Department, (2) A System-Wide “TIA Clinic”: A Pragmatic Approach to Transient Ischemic Attacks (TIAs) and Minor Strokes

Farhan Ishaq, MD, MPH (2018 – 2020) – Project: Early Diagnosis and Treatment of Sleep Apnea after Stroke

Stroke Research Fellows – University of Tennessee Health Science Center, Memphis, Tennessee, United States:

Nariman Noorbakhash-Sabet, MD (2015-2018) – Project: Cerebral Microbleeds Imaging Database

Stroke Research Interns - Geisinger Health System, Danville, Pennsylvania, United States:

Yezhong (Steve) Lu M2 (2021) – Projects: (1) Brain, retain, and kidney health (2) Lyme disease and optic neuritis

Anyaehe Michelle M.Sc. (2020) – Projects: (1) TIA clinic process and outcome

Oluwaseyi Olulana M.Sc. (2019-2020) – Projects: (1) whole-exome sequencing and MRI (IMAGENE database), (2) disparity in SAR-CoV-2 infection

Vishakha Sharma M.Sc. (2019-202) - Projects: (1) Malnutrition, Health and the Role of Machine Learning in Clinical Setting, (2) Microbiomes and stroke

Isabel Friedenber B.Sc. (2020) – Project: clinical characteristics of stroke in SAR-CoV-2 infection

Remco J. Hack, MD, Ph.D. (candidate) (2018) – Projects: Deep variant analysis of *NOTCH3* gene

Sweta Thakur, MD, MPH (2017) – Project: (1) A System-Wide “TIA Clinic”: A Pragmatic Approach to Transient Ischemic Attacks (TIAs) and Minor Strokes (2) Prevalence of Potential Pathogenic Variants in Actionable Genes for Nervous System Disorders in the Geisinger MyCode Community Health Initiative

Ayesha Khan, MD (2017 – 2019) – Projects: Deep variant analysis of *NOTCH3* gene (2) Prevalence of Potential Pathogenic Variants in Actionable Genes for Nervous System Disorders in the Geisinger MyCode Community Health Initiative

Direct Research Mentoring – House Staff and Medical Students

Manvita Mareboina, M2 (Pennsylvania State University, 2023 – present), Nandini Sarkar, M2 (Pennsylvania State University, 2023 – present), Diana Orabuese, M2 (Pennsylvania State University, 2023 – present) – Project: Prediction of Atrial fibrillation using Multimodal Data. Alireza Hosseini MD, (Mashhad University, 2023 – present), Sina Hejazian MD, (Tabriz University, 2023 – present), Roham Sarmadian MD, (Tehran University, 2023 – present) – Project: BRFS data and stroke outcomes. Yuki Kawamura, M2 (Cambridge University, 2022-present), Kinza Abbas, M2 (Geisinger Commonwealth School of Medicine, 2020) – Project: Brain, retain and kidney health; Clare Lambert, M4 (Royal College of Surgeons in Ireland 2020) – Project: Gender disparity and stroke outcome; Johan Diaz, M2 (Geisinger Commonwealth School of Medicine, 2020) – Project: Underdiagnosis of hypertension, diabetes and atrial fibrillation among patient with stroke diagnosis; Eric Koza, M2 (Geisinger Commonwealth School of Medicine, 2020) – Project: Underdiagnosis of hypertension, diabetes and atrial fibrillation among patient with stroke diagnosis; Emily Rieder, M2 (Geisinger Commonwealth School of Medicine, 2020) – Project: CADASIL, *NOTCH-3* mutation and inflammation; Cabrera Fedor, M1 (Geisinger Commonwealth School of Medicine, 2019) – Project: whole-exome sequencing and MRI (IMAGENE database); Alexander Romeo, M1 (Geisinger Commonwealth School of Medicine, 2019) – Project: whole-exome sequencing and MRI (IMAGENE database); Elizabeth A. Martino, MD (Geisinger, 2017-2018) – Project: Frequency of neurocheck in neuroICU and incidence of delirium; George Bourdages, M2 (Geisinger Commonwealth School of Medicine, 2018 – 2019) – Project: Long-term outcome of resuming anticoagulation treatment after anticoagulation-associated intracerebral hemorrhage; Joseph Hornak, M3 (Geisinger Commonwealth School of Medicine, 2017 – 2018) – Project: Deep phenotype and genotype analysis of *NOTCH3* variants; Nitin Goyal, MD (University of Tennessee, 2013 – 2016) – Project: UTHSC Acute Stroke Registry; Mantinder Singh, MD (University of Tennessee, 2014 – 2015) – Project: Cerebral Microbleeds Imaging Database; Shima Shahjoui, MD (Tehran University, 2013 – present) – Projects: (1) Acute Stroke Registry (2) Cerebral Microbleeds Imaging Database, Tauseef Akhtar, MD (John H. Stroger Jr. Hospital of Cook County, 2016 – 2017) – Project: Mechanism of simultaneous cerebral infarcts in multiple arterial territories; Ali Kero, MD (University of Tennessee, 2014 – 2016) – Project: UTHSC Acute Stroke Registry; Shailesh Male, MD (University of Tennessee, 2013 – 2016) – Project: UTHSC Acute Stroke Registry; Sulaiman Iftikhar, MD (University of Tennessee, 2014 – 2016) – Project: UTHSC Acute Stroke Registry; Michael McCormack, M3 (Medical Student, University of Tennessee, 2015 - 2016) – Project: Cerebral Microbleeds Imaging Database; Mbaye, Marieme, M2 (University of Tennessee, 2014 – 2015) – Project: Internet-based information seeking behavior for transient ischemic attack and ischemic stroke; John Daniel Legge, M3 (University of Tennessee, 2014 – 2015) – Project: Fluid-Attenuated Inversion Recovery (FLAIR) Imaging Database; Ada Elizabeth Graham, M3 (University of Tennessee, 2014 – 2015) – Project: Fluid-Attenuated Inversion Recovery (FLAIR) Imaging Database; Richard Charles Lee, M1 (University of Tennessee, 2014 – 2015) – Project: Fluid-Attenuated Inversion Recovery (FLAIR) Imaging Database; David Copeland, M2 (University of Tennessee, 2014 – 2015) – Project: Fluid-Attenuated Inversion Recovery (FLAIR) Imaging Database

Thesis Advisor and Ph.D. Committee Member – Postgraduate Students

Masoud Abdollahi, Ph.D. (candidate; 2019 - present), Rochester Institute of Technology, Rochester, New York, United States – Project: Fall risk assessment in stroke survivors using motion sensors; Remco J. Hack, MD, Ph.D. (candidate; 2018 - present), Lyden University, Netherland – Project: Deep variant analysis of *NOTCH3* gene; Iftikhar Anam, Ph.D. candidates (2014 – 2016), University of Memphis, Electrical and Computer Engineering, Memphis, Tennessee, United States; Vida Abedi, Ph.D. candidates (2008-2012), University of Memphis, Electrical and Computer Engineering, Memphis, Tennessee, United States – Dissertation: ARIANA: Adaptive Robust and Integrative Analysis for finding Novel Associations; Vida Abedi, MSc. Program (20011-2012), University of Memphis Bioinformatics, Memphis, Tennessee, United States – Thesis: Knowledge Discovery Through Large-Scale Literature-Mining of Biological Text-Data. Nirajan, Bhupendra, MD, Postgraduate Program: Applied Research in Public Health (2007-2009), Nepal Ayurveda Society – Project: Effectiveness of health service providing for victimized women in domestic violence in Kathmandu city. Nira Joshi, Postgraduate Program: Applied Research in Public Health (2007-2008), International Institute of Health Studies, Ottawa, Ontario, Canada – Project: Iron deficiency anemia among adolescent girls - study the prevalence and correlates of iron deficiency anemia among female adolescents in Kathmandu; Sidiqullah Shinwari, MD, Postgraduate Program: Applied Research in Public Health (2007-2008), Afghanistan Center for Training and Development, Afghanistan – Project: Contracting out of delivery of a basic package of health services on quality of health care and patient satisfaction in four provinces of Afghanistan: mixed qualitative and quantitative study; Marcqueline Chiona Zulu, Postgraduate Program: Applied Research in Public Health (2007-2008), Ministry of Community Development and Social Services, Lusaka, Zambia – Project: Reviewing of effectiveness of the social services provided by the organizations to the street kids in the street kid's projects supported by “Children in Need.”

C.2. Lectures and Other Educational Activities

NEURO 740 Neurology Clerkship, Clinical Instructor to third-year medical students (2-5 students per monthly rotation)	2022 – present
NEURO 797 Clinical Neurology Special Topics, Clinical Instructor to third-year or fourth-year medical students (1-2 students per monthly rotation)	2022 – present
Lecture, Neurology Lecture Series, Neurology Residency Program, Department of Neurology, Geisinger Health System, Danville, Pennsylvania, United States Title: Advantages of T2 Gradient-Recalled Echo (GRE) and T2-Fluid-Attenuated Inversion Recovery (FLAIR) MR Sequences in Acute Ischemic Stroke	2019
Lecture, Geisinger Care Management Team, Geisinger Health System, Danville, Pennsylvania, United States Title: Late Complications of Stroke	2019
Lecture (Yearly), Lecture Series for Intensive Care Unit Fellows, Department of Critical Care, Geisinger Health System, Danville, Pennsylvania, United States Title: Essentials of Neuroimaging	2017 – present
Lecture (Yearly), Neuroscience Course for first-year medical students, Geisinger Community Medical Center, Pennsylvania, United States Title: Stroke Diagnosis and Management	2017 – 2018
Lecture, Research Workshop, Neurology Residency Program, Department of Neurology, Geisinger Health System, Danville, Pennsylvania, United States Title: Introduction to Writing a Research Article, Title: Biostatistics Overview	2017
Lecture (Quarterly), National Institute of Health Stroke Scale Workshop for Nursing Staff, Geisinger Wyoming Valley Medical Hospital, Wilkes-Barre, Pennsylvania, United States Title: National Institute of Health Stroke Scale and Clinical Relevance	2016 – 2018

Lecture (Yearly), Neurology Lecture Series, Neurology Residency Program, Department of Neurology, Geisinger Health System, Danville, Pennsylvania, United States Title: Subarachnoid Hemorrhage Management Title: CNS Vasculitis	2016 – present
Lecture, National Institute of Health Stroke Scale Workshop for Nursing Staff, Geisinger Medical Center, Danville, Pennsylvania, United States Title: National Institute of Health Stroke Scale and Clinical Relevance	2017
Lecture, Nursing and Rehabilitation Staff, HealthSouth Rehabilitation Center, Memphis, Tennessee, United States Title: Late Complications of Stroke	2016
Lecture (Yearly), Internal Medicine Neurology Lecture Series. Essential of Neuroimaging: What Every Clinician Should Know. Department of Internal Medicine, University of Tennessee Health Science Center. Memphis, Tennessee, United States	2015 – 2016
Lecture, Neuro-Emergency Course for Neurology Residents, Department of Neurology, University of Tennessee Health Science Center, Memphis, Tennessee, United States Titles: Neuroimaging for Neurologists, Neurological Examination	2014 – 2016
Presentation (Bi-Monthly) - Stroke Case of the Week, Department of Neurology, University of Tennessee Health Science Center, Memphis, Tennessee, United States	2013 – 2016
Program Director, Graduate Certificate Program, International Institute of Health Studies, Ottawa, Ontario, Canada Title: Applied Research in Public Health	2004 – 2008
Course Leader, International Institute of Health Studies, Canadian Counselling Association, Ottawa, Ontario, Canada Titles: Different Types of Epidemiological (4 U); Fundamentals of Epidemiology and Public Health (3.5 U); Essentials of Measurement in Health Studies (3.5 U)	2005 – 2007
Program Director, Research Methodology Workshop, Iran University of Medical Sciences and Health Services, Tehran, Iran	2001 – 2002
Instructor, Research Methodology Workshop for Medical Students, Iran University of Medical Sciences and Health Services, Tehran, Iran	1996 – 1997

C.3. Community Education

Stroke Support Groups - Northeastern Pennsylvania, Scranton, Pennsylvania, United States	2016 – 2022
Sullivan County Health Fair, Pennsylvania, United States – Public Education for Stroke and Stroke Prevention, Public Knowledge Assessment	2016
Bloomsburg Health Fair, Pennsylvania, United States – Public Education for Stroke and Stroke Prevention	2016
Stroke Support Groups - Northeastern Pennsylvania, Wilkes-Barre, Pennsylvania, United States	2016
Stroke Prevention, Church Health Network, Memphis, Tennessee, United States	2016

Stroke prevention, Washington District of Columbia Health Fair, District of Columbia, Washington, United States 2013

Effects of violence against women, Family Service Toronto, Toronto, Ontario, Canada 2002 – 2003

C.4. Teaching and Mentorship Awards and Recognitions

Kings' College, Physician Assistant Graduate Program, Recognition for teaching and mentoring advanced practitioner students. 2019

Neurology Department, University of Tennessee Health Science Center, Annual award for the best resident mentor. 2014

Neurology Department, University of Tennessee Health Science Center, Recognition for teaching medical students. 2011

D. RESEARCH AND PUBLICATION

D.1. Research Awards

Role: Principal Investigator

1. Machine Learning Prediction of 1-Year Mortality and Recurrence after Ischemic Stroke Using Enriched EHR data. NIH-1R01NS128986-01A1 2023 – present
 Goal: This proposal seeks to expand and improve predictive models through the creative use of vetted EHR data for ischemic stroke patients from three large and different health systems (Penn State Health, Geisinger, and Johns Hopkins), caring for more than eight million people in rural and urban areas. This project will further explore the predictive value of social determinants of health (SDoH) when added to the clinical data. *Status of Support: Pending, Percentile: 12.0. Project Number: R01NS128986 - Name of PD/PI: Abedi (Contact) / Zand (mPI) - *Source of Support: NIH – NINDS *Primary Place of Performance: Pennsylvania State University College of Medicine, Hershey * Project/Proposal Start and End Date: 04/01/2023 – 03/31/2027 * Total Award Amount (including Indirect Costs): \$3,232,399
2. Current and future physicians' knowledge, attitudes, and perspectives on the adoption of AI in clinical workflow 2023 – present
 Goal: To explore the knowledge, attitudes, and perspectives of current and future physicians toward AI to clarify how to integrate biomedical AI tools into the clinical workflow successfully. * Status of Support: Active * Name of PD/PI: Abedi (Contact-PI) / Wagner (PI) / Zand (PI) * Source of Support: Clinical and Translational Science Institute (CTSI) Bridges to Translation. *Total Award Amount: \$49,991
3. Factors associated with undertreatment of atrial fibrillation in rural Pennsylvania 2022 – present
 Goal: To determine the factors associated with undertreatment of atrial fibrillation in rural Pennsylvania using our rural patient cohort from the University of Pennsylvania and Geisinger. *Status of Support: Active. Name of PD/PI: Zand, Abedi *Source of Support: Barsumian Trust. *Primary Place of Performance: Pennsylvania State University College of Medicine, Hershey. *Total Award Amount: \$25,000
4. An Interdisciplinary Approach to Improving the Management of Patients with Atrial Fibrillation 2021 – 2022
 Goal: To develop a data-driven strategy and a coordinated clinical work-flow implementation to improve patient adherence to atrial fibrillation medication to mitigate the risk for stroke. *Status: Completed. * Name of PD/PI: Zand. *Source of Support: Heart Rhythm Society.* Total Award Amount: \$150,000
5. Optimization-based model to support shared decision making for lifestyle modification among TIA and stroke patients: a feasibility study 2020 – 2022
 Goal: To develop a model of shared decision-making using optimization algorithms based on multi-dimensional stability modeling. Status: Completed. * Name of PD/PI: Zand. *Source of Support: Bucknell University.* Total Award Amount: \$19,897.
6. Innovative Screening Tool for Stroke in the Emergency Department Using Machine Learning Algorithms 2019 – 2021
 Goal: To develop, validate, implement, evaluate, and fine-tune a cloud-based, automated algorithm based on machine learning methods for the screening of stroke in an emergency setting. *Status: Completed. * Name of PD/PI: Zand (PI); Abedi (Co-PI). *Source of Support: Genentech (ROCHE).* Total Award Amount: \$601,950.

7. A Pilot Study: Single Gene Variants for Cerebral Small Vessel Disease Among MyCode Patients with Multiple Sclerosis Diagnosis: Could it be a Misdiagnosis? 2019 – 2021
Goal: To explore the genetics of patients with multiple sclerosis. *Status: Completed.
*Name of PD/PI: Zand (PI). *Source of Support: Geisinger. *Total Award Amount: \$21,789)
8. Early Diagnosis and Treatment of Sleep Apnea after Stroke 2019 – 2021
Goal: To pilot our novel screening and diagnosis process in an stroke inpatient setting
*Status: Stopped early due to pandemic. *Name of PD/PI: Naik (PI), Zand (CoPI).
*Source of Support: Geisinger Health Plan. *Total Award Amount: \$389,448.
9. A System-Wide “TIA Clinic”: A Pragmatic Approach to Transient Ischemic Attacks (TIAs) and Minor Strokes 2018 – 2020
Goal: Expand the TIA clinic to a system-wide program within the Geisinger system, include minor stroke patients, and closely monitor the safety and quality of care. Also aim at using System Dynamics to optimize the TIA clinic workflow and to further improve the quality of care, enhance patients’ satisfaction, and reduce the cost.
*Status: Completed. *Name of PD/PI: Zand (PI), Abedi (CoPI). *Source of Support: Geisinger Health Plan. *Total Award Amount: \$246,350.
10. An Intuitive Tool for Risk Stratification of Transient Ischemic Attack in the Emergency 2017 – 2018
Goal: To use prospectively collected data from our TIA clinic and the ED in Geisinger Medical Center, Geisinger Wyoming Valley Medical Center, and Geisinger Community Medical Center to develop an intuitive TIA risk stratification tool in an ED setting using advanced statistical and machine learning methodologies. *Status: Completed. *Name of PD/PI: Zand (PI), Abedi (CoPI). *Source of Support: Bucknell University. *Total Award Amount: \$19,960.
11. Investigate Traumatic Events, Coping Responses, and Their Correlates Among Refugee Youth in Canada - *Status: Completed. *Name of PD/PI: Powel J (PI), Zand (CoPI). 2008 – 2010
*Source of Support: Center for Addiction and Mental Health, Ontario, Canada. *Total Award Amount: \$245,130 (CAD).
12. Frequency and Correlates of Spouse Abuse in Iran 2001 – 2003
*Status: Completed. *Name of PD/PI: Zand (PI). *Source of Support: Ministry of Health, Tehran, Iran. *Total Award Amount: \$4,805,000IRR
13. Epidemiology and Mortality of Burns in Tehran 1996 – 1998
*Status; Completed. Name of PD/PI: Lari AR (PI), Zand (CoPI). *Source of Support: Iran University of Medical Sciences, Tehran, Iran. *Total Award Amount: \$1,860,000IRR.
14. Screening for Nasopharyngeal Carriers of Staphylococcus Aureus among Children Hospital Medical Personnel *Status; Completed. Name of PD/PI: Soltani, K (PI), Zand (CoPI). *Source of Support: Iran University of Medical Sciences, Tehran, Iran. *Total 1,225,000IRR. 1996 – 1997

Role: Co-Investigator

1. Dynamic cerebrovascular morphology changes in acute ischemic stroke – NIH 1R01NS131554 2024 – present
Goal: This application proposes to develop a fully automatic algorithm to extract geometric features from brain vessels of Acute Ischemic stroke (AIS) patients in real-

time and use these features to improve the prediction of major complications and long-term outcomes after stroke and acute reperfusion therapies *Status of Support: Pending, Name of PD/PI: Laksari (Contact) - *Source of Support: NIH – NINDS *Primary Place of Performance: Inversity of California Riverside * Project/Proposal Start and End Date: 04/01/2024 – 03/31/2028 * Total Award Amount (including Indirect Costs): \$3,695,092

2. Improving treatment strategy for Type 2 diabetes mellitus using clinical and genetic biosignatures 2018 – 2020
Goal: Determine treatment response, outcomes, complications and adverse events from Geisinger’s EHR by identifying genetic and clinical biosignatures. *Status: Completed. *Name of PD/PI: Lee, Ming Ta (PI), Zand (CoI). *Source of Support: Geisinger Health Plan. *Total Award Amount: \$389,448.

D.2. Multicenter Studies and Trials

1. OCEANIC-STROKE: Asundexian for secondary ischemic stroke prevention; Status: Pending; Role: Site PI 2023 – present
2. C3FIT (Coordinated, Collaborative, Comprehensive, Family-based, Integrated, and Technology-enabled Care): A Comparative Effectiveness Randomized Trial to Improve Stroke Care Delivery
Investigator and site PI
Sponsor: The Patient-Centered Outcomes Research Institute (PCORI) 2021 – present
3. Ethnic/Racial Variations of Intracerebral Hemorrhage (ERICH-GENE)
Investigator
Sponsor: National Institute of Health, United States 2020 – present
4. A Phase 3, Randomized, Double-Blind, Placebo-Controlled, Multicenter Study of Mavorixafor in Patients with WHIM Syndrome with Open-Label Extension – Site Principal Investigator
Sponsor: X4 Pharmaceuticals Incorporated, United States 2019 – 2020
5. Quantum AF: Quantify Use of ANTicoagUlation to Improve Management of Atrial Fibrillation – Site Principal Investigator
Sponsor: Premier Health, United States 2018 – 2019
6. MR WITNESS: A Study of Intravenous Thrombolysis with Alteplase in MRI-Selected Patients – Site Principal Investigator
Sponsors: National Institute of Health, United States 2014 – 2017
7. Phase 3, Randomized, Placebo-Controlled, Double-Blinded Trial of the Combined Lysis of Thrombus with Ultrasound and Systemic Tissue Plasminogen Activator (tPA) for Emergent Revascularization in Acute Ischemic Stroke (CLOTBUST-ER) – Site-Investigator.
Sponsors: Cerevast Therapeutics, Inc., United States 2014 – 2015
8. POSITIVE: PerfusiOn imaging Selection of Ischemic STroke Subjects for EndoVascular ThErapy – Site-Investigator.
Sponsors: Medical University of South Carolina, South Carolina, United States 2014 – 2016

9. A Randomized, Double-Blind, Multinational Study to Prevent Major Vascular Events with Ticagrelor Compared to Aspirin (ASA) in Patients with Acute Ischemic Stroke or TIA [SOCARATES - Acute Stroke Or Transient IsChaemic Attack TReated with Aspirin or Ticagrelor and Patient OutcomES]– Site-Investigator. 2014 – 2016
Sponsors: AstraZeneca Pharmaceuticals
10. Matrix Metalloproteinase Serum Assay for Neuroprotection in Cerebrovascular Disease (MESA) – Site-Investigator. 2014 –2016
Sponsors: National Institute of Health, United States
11. Combined Approach to Lysis Utilizing Eptifibatide and rt-PA in Acute Ischemic Stroke- Enhanced Regimen" (CLEAR-ER Stroke Trial) – Site-Investigator. 2012 – 2013
Sponsors: National Institute of Health, United States

D.3. Study Groups and Consortiums (*Selected*)

1. Ethnic/Racial Variations of Intracerebral Hemorrhage (ERICH-GENE) Research Consortuim 2020 – present
2. Clinical Champion, PaTH Network, pcornet, The National Patients-Centered Clinical Research Network 2020 – 2022
3. Member, Global Burden of Disease (GBD) Collaborator Network, Institute for Health Metrics and Evaluation, University of Washington, Seattle, Washington, United States 2020 – present
4. Founder, COVID-19 and Stroke Multinational Study Group, Geisinger, Danville, Pennsylvania, United States 2020 – 2022
5. Member, CASCADE Study Group: Call to Action: SARS-CoV-2 and CerebrovAscular DisordErs, Western University, London, Ontario, Canada 2020 – 2022
6. Member, International Stroke Genetics Consortium, Harvard Medical School, Boston, United States 2017 – present
7. Member, Early-Onset Stroke Working Group, University of Maryland, Baltimore, Maryland, United States 2015 – present
8. Member, SMART McCoy Team, Qualcomm Tricorder X Prize competition, San Diego, California, United States 2013 – 2014
9. Member, Natural History of Stroke: Cause and Development National Institute of Health, Bethesda, Maryland, United States 2012 – 2013
10. Member, Diaspora, Heightened Identity, Gender and Cultural Resistance – Ford Foundation and York University, Ontario, Canada 2002 – 2003

D.4. Publications

Journal Articles

1. Hejazian SS, Sadr AV, Shahjouei S, Vemuri A, Shouhao Z, Abedi V, Zand R. Prevalence and determinant of long-term Post-COVID conditions among stroke survivors in the United States. *J Stroke Cerebrovasc Dis.* 2024 Sep 18;33(12):108007. doi: 10.1016/j.jstrokecerebrovasdis.2024.108007. [Epub ahead of print] PubMed PMID: 39299663.

2. Feng Z, Chen Q, Griffin P, Li J, Abedi V, Zand R. Care settings of transient ischemic attack in the United States: A cohort study from the TriNetX health research network. *J Stroke Cerebrovasc Dis.* 2024 Sep;33(9):107888. doi: 10.1016/j.jstrokecerebrovasdis.2024.107888. Epub 2024 Jul 25. PubMed PMID: 39067658; PubMed Central PMCID: PMC11383835.
3. Namjoo-Moghadam A, Abedi V, Avula V, Ashjazadeh N, Hooshmandi E, Abedinpour N, Rahimian Z, Borhani-Haghighi A, Zand R. Machine learning-based Cerebral Venous Thrombosis diagnosis with clinical data. *J Stroke Cerebrovasc Dis.* 2024 Sep;33(9):107848. doi: 10.1016/j.jstrokecerebrovasdis.2024.107848. Epub 2024 Jul 2. PubMed PMID: 38964525.
4. Hendrix P, Gross BA, Allahdadian S, Sioutas GS, Koul P, Tarbay AC, Lang MJ, Srinivasan VM, Al-Bayati AR, Li J, Noto A, Nogueira RG, Burkhardt JK, Zand R, Schirmer CM. Tenecteplase versus alteplase before stroke thrombectomy: outcomes after system-wide transitions in Pennsylvania. *J Neurol.* 2024 Aug;271(8):5637-5641. doi: 10.1007/s00415-024-12530-x. Epub 2024 Jul 3. PubMed PMID: 38960948; PubMed Central PMCID: PMC11319427.
5. Vemuri AK, Hejazian SS, Vafaei Sadr A, Zhou S, Decker K, Hakun J, Abedi V, Zand R. Self-Management among Stroke Survivors in the United States, 2016 to 2021. *J Clin Med.* 2024 Jul 25;13(15). doi: 10.3390/jcm13154338. PubMed PMID: 39124605; PubMed Central PMCID: PMC11313262.
6. Georgakis MK, Malik R, El Bounkari O, Hasbani NR, Li J, Huffman JE, Shakt G, Tack RWP, Kimball TN, Asare Y, Morrison AC, Tsao NL, Judy R, Mitchell BD, Xu H, Montasser ME, Do R, Kenny EE, Loos RJF, Terry JG, Carr JJ, Bis JC, Psaty BM, Longstreth WT, Young KA, Lutz SM, Cho MH, Broome J, Khan AT, Wang FF, Heard-Costa N, Seshadri S, Vasani RS, Palmer ND, Freedman BI, Bowden DW, Yanek LR, Kral BG, Becker LC, Peyser PA, Bielak LF, Ammous F, Carson AP, Hall ME, Raffield LM, Rich SS, Post WS, Tracy RP, Taylor KD, Guo X, Mahaney MC, Curran JE, Blangero J, Clarke SL, Haessler JW, Hu Y, Assimes TL, Kooperberg C, Bernhagen J, Anderson CD, Damrauer SM, Zand R, Rotter JI, de Vries PS, Dichgans M. Rare damaging CCR2 variants are associated with lower lifetime cardiovascular risk. medRxiv. 2024 Jun 26;. doi: 10.1101/2023.08.14.23294063. PubMed PMID: 37645892; PubMed Central PMCID: PMC10462211.
7. Mak A, Matouk CC, Avery EW, Behland J, Haider SP, Frey D, Madai VI, Vajkoczy P, Griessenauer CJ, Zand R, Hendrix P, Abedi V, Sanelli PC, Falcone GJ, Petersen N, Sansing LH, Sheth KN, Payabvash S, Malhotra A. Automated detection of early signs of irreversible ischemic change on CTA source images in patients with large vessel occlusion. *PLoS One.* 2024;19(6):e0304962. doi: 10.1371/journal.pone.0304962. eCollection 2024. PubMed PMID: 38870240; PubMed Central PMCID: PMC11175522.
8. Nguyen KT, Xu H, Gaynor B, Adebamowo SN, McArdle PF, O'Connor T, Worrall B, Malik R, Boncoraglio GB, Zand R, Kittner SJ, Mitchell BD. The Impact of Conventional Stroke Risk Factors on Early and Late Onset Ischemic Stroke: a Mendelian Randomization Study. medRxiv. 2024 Jun 2;. doi: 10.1101/2024.05.31.24308308. PubMed PMID: 38853993; PubMed Central PMCID: PMC11160856.
9. Malik R, Beaufort N, Li J, Tanaka K, Georgakis MK, He Y, Koido M, Terao C, Japan B, Anderson CD, Kamatani Y, Zand R, Dichgans M. Genetically proxied HTRA1 protease activity and circulating levels independently predict risk of ischemic stroke and coronary artery disease. *Nat Cardiovasc Res.* 2024 Jun;3(6):701-713. doi: 10.1038/s44161-024-00475-3. Epub 2024 May 20. PubMed PMID: 39196222.
10. Global incidence, prevalence, years lived with disability (YLDs), disability-adjusted life-years (DALYs), and healthy life expectancy (HALE) for 371 diseases and injuries in 204 countries and territories and 811 subnational locations, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet.* 2024 May 18;403(10440):2133-2161. doi: 10.1016/S0140-6736(24)00757-8. Epub 2024 Apr 17. PubMed PMID: 38642570; PubMed Central PMCID: PMC11122111.

11. Global burden of 288 causes of death and life expectancy decomposition in 204 countries and territories and 811 subnational locations, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet*. 2024 May 18;403(10440):2100-2132. doi: 10.1016/S0140-6736(24)00367-2. Epub 2024 Apr 3. PubMed PMID: 38582094; PubMed Central PMCID: PMC11126520.
12. Vafaei Sadr, A., Abedi, V., Li, J., **Zand R**. Imputing Missing Data in Electronic Health Records: A Comparison of Linear and Non-Linear Imputation Models. *18 (4): 235-241*
13. Global age-sex-specific mortality, life expectancy, and population estimates in 204 countries and territories and 811 subnational locations, 1950-2021, and the impact of the COVID-19 pandemic: a comprehensive demographic analysis for the Global Burden of Disease Study 2021. *Lancet*. 2024 May 18;403(10440):1989-2056. doi: 10.1016/S0140-6736(24)00476-8. Epub 2024 Mar 11. PubMed PMID: 38484753; PubMed Central PMCID: PMC11126395.
14. Global, regional, and national burden of disorders affecting the nervous system, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021. *Lancet Neurol*. 2024 Apr;23(4):344-381. doi: 10.1016/S1474-4422(24)00038-3. Epub 2024 Mar 14. PubMed PMID: 38493795; PubMed Central PMCID: PMC10949203.
15. Abedi V, Misra D, Chaudhary D, Avula V, Schirmer CM, Li J, Zand R. Machine Learning-Based Prediction of Stroke in Emergency Departments. *Ther Adv Neurol Disord*. 2024;17:17562864241239108. doi: 10.1177/17562864241239108. eCollection 2024. PubMed PMID: 38572394; PubMed Central PMCID: PMC10989051.
16. Renedo D, Acosta JN, Leasure AC, Sharma R, Krumholz HM, de Havenon A, Alahdab F, Aravkin AY, Aryan Z, Bärnighausen TW, Basu S, Burkart K, Coberly K, Criqui MH, Dai X, Desai R, Dharmaratne SD, Doshi R, Elgendy IY, Feigin VL, Filip I, Gad MM, Ghozy S, Hafezi-Nejad N, Kalani R, Karaye IM, Kisa A, Krishnamoorthy V, Lo W, Mestrovic T, Miller TR, Misganaw A, Mokdad AH, Murray CJL, Natto ZS, Radfar A, Ram P, Roth GA, Seylani A, Shah NS, Sharma P, Sheikh A, Singh JA, Song S, Sotoudeh H, Vervoort D, Wang C, Xiao H, Xu S, **Zand R**, Falcone GJ, Sheth KN. Burden of Ischemic and Hemorrhagic Stroke Across the US From 1990 to 2019. *JAMA Neurol*. 2024 Mar 4;. doi: 10.1001/jamaneurol.2024.0190. [Epub ahead of print] PubMed PMID: 38436973.
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More than half of patients with atrial fibrillation do not receive guideline-based therapy. May 13, 2021. Available from: <https://www.healio.com/news/primary-care/20210513/more-than-half-of-patients-with-atrial-fibrillation-do-not-receive-guidelinebased-therapy>

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Stroke After TIA: Risk Remains High. By Sue Hughes, Medscape, October 20, 2020. Available from: https://www.medscape.com/viewarticle/939462?src=soc_lk_share

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IV Thrombolysis May Not Add to Hemorrhage Risk in Patients Given DOACs. Reuters Health Information, By David Douglas, Medscape, January 11, 2020. Available from: <https://www.medscape.com/viewarticle/923617>

Related Activity: Stroke Awareness

Tom Notchick: Stroke recovery update. Television Interview, WBRE, Broadcasted on May 15, 2019. Available from: <https://www.pahomepage.com/news/tom-notchick-stroke-recovery-update/2004401662>

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Author Interview: Ramin Zand, MD, and Vida Abedi, Ph.D. AHA/ASA: Blogging Stroke. November 1, 2017 Nov; Available from <https://journals.heart.org/bloggingstroke/2017/11/01/author-interview-ramin-zand-md-and-vida-abedi-phd/>

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Dunmore stroke patient battles way back - Newspaper Interview. Northeast Pennsylvania Business Journal. May 12, 2017; Available from <http://biz570.com/education-healthcare/healthcare/dunmore-stroke-patient-battles-way-back-1.2185647>

Internet-Based Information Seeking Behavior for Stroke - Podcast. International Journal of Stroke. October 12, 2015.

D.5. Invited Talks

Physician Knowledge and Attitude Toward Use of AI in Healthcare, Grand Round, Department of Neurology, Pennsylvania State University, Hershey, Pennsylvania, United States (October 2024)

Machine Learning in Clinical Diagnosis and Outcome Prediction, Artificial Intelligence and Big Data in Stroke Care: From Hype to Reality Session, International Stroke Conference, Phoenix, Arizona, United States (February 2024)

Leverage Multimodal EHR Data for Better Medical Predictions, Translational Brain Research Center, Penn State College of Medicine, Hershey, Pennsylvania, United States (April 2023)

See the hit: digging into data, Grand Round, Department of Neurology, Pennsylvania State University, Hershey, Pennsylvania, United States (March 2023)

Genetic Predisposition of Stroke: Chipping Away at the tip of the Iceberg Department of Neurology, Pennsylvania State University, Hershey, Pennsylvania, United States (December 2022)

Puzzling Stroke: Rare Symptom of Brain Damage, Department of Neuroscience, Bucknell University, Williamsburg, Pennsylvania, United States (December 2021)

Clinical Decision Tools for Hospitalized Stroke Care, World Stroke Organization (WSO), World Stroke Congress, (October 2021)

At the intersect of stroke risk prediction, big data, and precision health – moving toward comprehensive stroke ecosystem, Department of Neurology Invited Grand Round, Geisinger, Danville, Pennsylvania, United States (September 2021)

At the intersect of stroke risk prediction, machine learning, and precision health – moving toward comprehensive stroke ecosystem, Department of Neurology Invited Grand Round, University of North Carolina, Chapel Hill, North Carolina, United States (February 2021)

At the intersect of stroke risk prediction, machine learning, and precision health – moving toward comprehensive stroke ecosystem, Department of Neurology Invited Grand Round, University of Texas Houston, Texas, United States (November 2020)

At the Intersect of Outcome Prediction, Machine Learning, and Precision Health, Universal Scientific Education and Research Network (USERN) Congress Invited Talk, Tehran, Iran (November 2020)

At the Intersect of Stroke Prediction, Machine Learning & Precision Health, Department of Neurology Invited Grand Round, Cedars-Sinai Medical Center, Los Angeles, California, United States (October 2020)

At the Intersect of Stroke Prediction, Machine Learning & Precision Health, Department of Neurology Invited Grand Round, Penn State Health Milton S. Hershey Medical Center, Hershey, Pennsylvania, United States (October 2020)

Epidemiology of Stroke and SARS-CoV-2 Infection: Results from Stroke and COVID-19 Multinational Study Group; Diagnosis and treatment of stroke during COVID-19 Pandemic Online Symposium, Iranian Stroke Society, Tehran, Iran (July 2020)

Implementations of Current AI Tools in Stroke Imaging; Artificial Intelligence in Stroke Imaging - Separating Hype from Reality, International Stroke Conference, Los Angeles, California, United States (February 2020)

At the Intersect of Stroke Prediction, Machine Learning & Precision Health, Department of Neurology Invited Talk, University of Maryland, Baltimore, Maryland, United States (October 2019)

The Geisinger MyCode Community Health Initiative: A Unique Biobank for Precision Health, University of Memphis, Memphis, Tennessee, United States (March 2019)

Imaging Biomarkers in Stroke, Hospital Grand Round, Geisinger Wyoming Valley Medical Center. Wilkes-Barre, Pennsylvania, United States (February 2019)

International Stroke Conference Reception for the Great River Affiliates. Honolulu, California, Hawaii, United States (February 2019)

Precision Health: Geisinger is Shaping the Future of Medicine, Health Equity Group, Diversity, and Inclusion Center of Excellence, Geisinger Commonwealth School of Medicine, Scranton, Pennsylvania, United States (January 2019)

Cryptogenic Stroke, Nursing Continuing Education, Geisinger, Wilkes-Barre, Pennsylvania, United States (November 2018)

Imaging Biomarkers of Stroke, Geisinger Stroke Symposium, Geisinger, Wilkes-Barre, Pennsylvania, United States (May 2018)

TIA Clinic: Smart Way for Management of TIA and Minor Stroke, Geisinger Stroke Symposium, Geisinger, Wilkes-Barre, Pennsylvania, United States (May 2018)

Acute Stroke Management, EMS Education Night, Geisinger Medical Center, Danville, Pennsylvania, United States (December 2017)

Care Priorities for Acute Stroke Patient, Geisinger Northeast Trauma Program, Geisinger Wyoming Valley Medical Center, Wilkes-Barre, Pennsylvania, United States (November 2017)

TIA Clinic: Smart Way for Management of TIA and Minor Stroke, Hospital Grand Round, Robert Packer Hospital. Sayre, Pennsylvania, United States (September 2017)

Imaging Biomarkers of Stroke, 7th Annual Regional Neurosciences Conference and State of the Art Stroke Summit, AtlanticCare, Atlantic City, New Jersey, United States (September 2017)

Imaging Biomarkers of Stroke, Geisinger Stroke Symposium, Geisinger, Wilkes-Barre, Pennsylvania, United States (May 2017)

TIA Clinic in Geisinger North-East, Northeast SCoPA meeting, Geisinger Community Medical Center. Scranton, Pennsylvania, United States (January 2016)

Recent Advances in Acute Stroke Treatment, Hospital Grand Round, Geisinger Wyoming Valley Medical Center. Wilkes-Barre, Pennsylvania, United States (October 2016)

Recent Advances in Acute Stroke Treatment, Hospital Grand Round, Robert Packer Hospital. Sayre, Pennsylvania, United States (October 2016)

Distinguishing Between Stroke and Mimic, Grand Round, Department of Neurology, University of Tennessee Health Science Center. Memphis, Tennessee, United States (January 2016)

MRI as a Proxy for Lesion Age in Acute Stroke. Grand Round, Department of Neurology, Louisiana State University. Shreveport, Louisiana, United States (September 2015)

Neuroimaging: An Update for Clinicians. 47th Annual Family Medicine Review Course and the 8th Family Medicine / Psychiatry CME Conference. College of Medicine, University of Tennessee Health Science Center. Fogelman Conference Center, Memphis, Tennessee, United States (March 2015)

Advantages of T2* Gradient-Recalled Echo (GRE) and T2-Fluid-Attenuated Inversion Recovery (FLAIR) MR Sequences in Acute Ischemic Stroke. Grand Round, Department of Neurology, University of Tennessee Health Science Center. Memphis, Tennessee, United States (November 2014)

Stroke is an Emergency: How Should We Respond. Grand Round, Department of Neurology, University of Tennessee Health Science Center. Memphis, Tennessee, United States (July 2014)

Is CBV Associated with Negative FLAIR Hyperintensity in Acute Ischemic Stroke? Grand Round, Department of Neurology, University of Tennessee Health Science Center. Memphis, Tennessee, United States (May 2014)

MRI: Basic Principles and Applications in Stroke. Invited Talk. Students Interested Group in Neurology (SiGN), School of Medicine, University of Tennessee Health Science Center. Memphis, Tennessee, United States (2014)

Stroke in Young Adults, Stroke Prevention Forum, Washington District of Columbia Health Fair, District of Columbia, Washington, United States (2013)

A 69 Years Old Man With Acute Bilateral Visual Loss. Grand Round. NINDS, National Institute of Health. Bethesda, Maryland, United States (2013)

MRI as a Proxy for Lesion Age in Acute Stroke. Grand Round, Department of Neurology, University of Tennessee Health Science Center. Memphis, Tennessee, United States (2012)

Advanced methods in reviewing the literature. Research in Public Health Workshop, Center for Research on Inner City Health at St. Michael's Hospital, University of Toronto, Toronto, Ontario, Canada (2007)

Contribution of Diaspora in development, Black History Month, Role of Diaspora in Africa Development. The Government of Canada and University of Ottawa, Ottawa, Ontario, Canada (2007)

How to Calculate Sample Size Based on the Type of Your Study. Research in Public Health Workshop, Center for Research on Inner City Health at St. Michael's Hospital, University of Toronto, Toronto, Ontario, Canada (2006)

Symptoms, Signs, and Predictors of Domestic Violence. Fight Against Domestic Violence Week, Family Service Association of Toronto, Toronto, Ontario, Canada (2002)

Intravenous Drug Abuse and Needs for Moving Toward Harm Reduction Strategy. Addiction and Public Health Summit, Shahriar Health Center, Iran University of Medical Sciences, Tehran, Iran (2002)

Addiction in Diabetic Patients. 2nd National Conference on Public Health and Preventive Medicine, Medical University of Kermanshah, Iran (2001)

Breast Cancer and Self-Breast Examination. 2nd National Conference on Public Health and Preventive Medicine, Medical University of Kermanshah, Iran (2001)

Epidemiology and Mortality of Burns in Tehran. National Conference on Epidemiological Researches. Kerman University of Medical Sciences, Kerman, Iran (1998)

Screening for Carriage of Staphylococcus Aureus among Asghar Children Hospital Medical Personnel. National Conference on Epidemiological Researches. Kerman University of Medical Sciences, Kerman, Iran (1998)

D.6. Conferences and Symposiums (Since 2010)

World Stroke Congress, Abu Dahbi, Emirate, October 2024

Presentation (podium): 1) General Health and its Determinants Among Stroke Survivors of the United States, The Behavioral Risk Factor Surveillance System 2016 to 2022 Analysis; 2) Association between Smoking Cessation and The General Health of Stroke Survivors in The United States: The Behavioral Risk Factor Surveillance System 2016 to 2022 Analysis. *Presentation (Moderated Poster):* Disparities in Social Determinants of Health Between Stroke Survivors Living Inside and Outside the United States Stroke Belt: Behavioral Risk Factor Surveillance System 2016-2022 Analysis.

European Stroke Conference, Basel, Switzerland, May 2024

Presentation (Moderated Poster): Prevalence and determinant of long-term Post-COVID conditions among stroke survivors in the United States. *Presentations (poster):* 1) The Health-Related Quality of Life Among Stroke Survivors With Post-COVID Conditions Living in the United States; 2) Risk of Ischemic Stroke After Transient Ischemic Attack in Patients Receiving Comprehensive vs Non-Comprehensive Diagnostic Workup, A Systematic Review and Meta-analysis.

International Stroke Conference, Phoenix, Arizona, February 2024

Presentation (podium/Invited talk): Machine Learning in Clinical Diagnosis and Outcome Prediction. *Presentation (Moderated Poster):* Coexistence of Enlarged Perivascular Spaces and Other MRI Markers of Cerebral Small Vessel Diseases. Stroke. *Presentations (poster):* Clinical Factors Associated With Enlarged Perivascular Spaces in a US Population of Caucasian Descent.

European Stroke Organisation Conference, Munich, Germany, May 2023

Presentation (podium/Invited talk): Disease trajectory in individuals with rare variants in seven cerebrovascular small vessel disease genes: a genotype-first, race- and sex-stratified study. *Presentation (Moderated Poster):* Fully automatic intracranial thrombus segmentation prediction from non-contrast CT and CT angiography. *Presentations (poster):* Define the Age of Young Ischemic Stroke Using Data-Driven Approaches.

World Stroke Congress, Singapore, October 2022

Presentation (podium/Invited talk): Predicting Ischemic Stroke in Emergency Departments Development and Validation Of Machine Learning Models.

International Stroke Conference, Virtual, February 2022

Presentation (podium/Invited talk): Predicting Ischemic Stroke in Emergency Departments Development and Validation Of Machine Learning Models

World Stroke Congress, Virtual, October 2021

Presentation (podium/Invited talk): Clinical Decision Tools for Hospitalized Stroke Care

International Stroke Conference, Virtual, February 2021

Presentations (poster): 1) Trends in Ischemic Stroke Risk Factors and Outcomes in a Rural Population in the United States; 2) Social Determinants of Stroke Hospitalization and Mortality in the United States; 3) Machine Learning-Enabled Prediction of Long-Term Stroke Recurrence Using Data From Electronic Health Records; 4) Risk of Stroke in Hospitalized SARS-Cov-2 Infected Patients a Multinational Population-Based Study; 5) Sex Disparity in Long-Term Stroke Recurrence and Mortality in a Rural Population in the United States; 6) SARS-CoV-2 and Stroke Characteristics a Report From the Multinational COVID-19 Stroke Study Group. 7) Outcomes of Patients With a Transient Ischemic Attack Based on Inpatient Versus Urgent Outpatient Evaluations a Systematic Review and Meta-Analysis. 8) Machine Learning Based Models of the 30-Day Readmission for Stroke Patients Using Electronic Health Record Data; 9) Obesity and Mortality After the First Ischemic Stroke: Is Obesity Paradox Real? 10) The Impact of SARS-COV-2 on Stroke Epidemiology and Care: A Meta-Analysis; 11) Polygenic Risk Scores Augment Stroke Subtyping and Outcome Evaluation.

European Stroke Organisation and the World Stroke Organization Virtual Conference, November 2020

Presentations (poster): 1) Fast-Track Long Term Continuous Heart Monitoring in a Stroke Clinic: A Feasibility Study; 2) Using Polygenic Risk Scores to Explore Stroke Etiologies and Subtypes; 3) Trends in Risk Factors and Ischemic Stroke Outcomes in a Rural Population in the United States; 4) CADASIL versus Multiple Sclerosis: Is It Misdiagnosis or Concomitant? A case Series

Universal Scientific Education and Research Network (USERN) Congress, Tehran, Iran, November 2020

Presentation (podium/Invited): At the Intersect of Outcome Prediction, Machine Learning, and Precision Health

Diagnosis and Treatment of Stroke During COVID-19 Pandemic Online Symposium, Iranian Stroke Society, Tehran, Iran, July 2020

Presentation (podium/Invited): Epidemiology of Stroke and SARS-CoV-2 Infection: Results from Stroke and COVID-19 Multinational Study Group

International Stroke Conference, Los Angeles, California, United States, February 2020

Presentations (podium/poster): 1) Genetic Variants From Lysine-Specific Demethylase 4C (KDM4C) Associated With White Matter Hyperintensity Burden in Ischemic Stroke Patients (*Podium*); 2) Risk of Early Ischemic Stroke After Transient Ischemic Stroke: A Systematic Review and Meta-Analysis (*Moderated Poster*); 3) Optimization of Risk Stratification for Anticoagulation-Associated Intracerebral Hemorrhage (*Poster*); 4) Implementations of Current AI Tools in Stroke Imaging (Invited Speaker); 5) Identifying Common Genetic Variants Associated With Fatal Stroke in Incident Ischemic Stroke Patients (*Poster*); 6) Conivaptan (Combined Vasopressin Receptor Antagonism) Attenuates Cerebral Edema Following Ischemic Stroke in Rodent Model (*Poster*); 7) Genome-wide Association Study of Early-Onset Ischemic Stroke Identifies Novel Locus on Chromosome 12 Near BCL7A/MLXIP (*Podium Presentation*).

American Society of Human Genetics, Houston, United States, October 2019

Presentation (podium): The *NOTCH3* associated disease spectrum: from CADASIL to the DiscovEHR population

European Stroke Organization Annual Conference, Milan, Italy, May 2019

Presentation (poster): 1) The Diagnostic Utility of ICH-Score in Patients with Anticoagulant Related Intracerebral Hemorrhage; 2) Six-Month Outcome of Transient Ischemic Attack and Its Mimics; 3) Rate and associated factors of transient ischemic attack misdiagnosis; 4) Cerebral Microbleed Prevalence and Burden in NOAC vs VKA-Associated Intracerebral Hemorrhage.

American Academy of Neurology Annual Meeting, Philadelphia, Pennsylvania, United States, May 2019

Presentations (podium/poster): 1) The Matrix Gla Protein (MGP) rs1800801 is Associated With First-Year Recurrence of Ischemic Stroke in Caucasians (*podium*); 2) Risk factors for acute ischemic stroke caused by anterior large vessel occlusion (*poster*); 3) Is There Any Pivotal Association Between Smoking and Alpha-1 Antitrypsin Level and Function in Aneurysmal Subarachnoid Hemorrhage? (*poster*)

International Stroke Genetics Consortium Meeting, Cambridge, United Kingdom, April 2019

Presentation (podium): Cysteine-altering *NOTCH3* variants are a risk factor for stroke in the elderly population: a study in 92,456 whole-exome sequenced individuals

International Stroke Conference, Honolulu, Hawaii, United States, February 2019

Presentation (poster): Long-Term Outcome of Resuming Anticoagulation Treatment After Anticoagulation-Associated Intracerebral Hemorrhage

International Stroke Genetics Consortium Meeting, Washington D.C, United States, November 2018

Geisinger Stroke Symposium, Geisinger, Wilkes-Barre, Pennsylvania, United States, May 2018

Presentation (podium): 1) TIA Clinic: Smart Way for Management of TIA and Minor Stroke Imaging Biomarkers in Stroke; 2) Imaging Biomarkers in Stroke

HudsonAlpha's Genomic Medicine Conference, Huntsville, Alabama, United States, June 2018

International Stroke Genetics Consortium Meeting, Kyoto, Japan, May 2018

Presentation (podium): Frequency of Potential Pathogenic Variants in Actionable Genes for Nervous System Disorders Among 92,456 Geisinger MyCode Participants

International Stroke Conference, Los Angeles, California, United States, January 2018

Presentations (podium/poster): 1) Safety of Intravenous Thrombolysis Among Patients Taking Direct Oral Anticoagulants: A Systematic Review and Meta-analysis (*podium*); 2) Knowledge of Warning Signs and Risk Factors Among Rural Population in Central Pennsylvania (*poster*); 3) Mechanism of Simultaneous Cerebral Infarcts in Multiple Arterial Territories: A Literature-Based Pooled Analysis (*poster*); 4) Shorter Door-to-Needle Time is the Only Independent Predictor for Initiation of Intravenous Thrombolysis (IVT) Within the Golden Hour (*poster*); 5) Towards a Simplified Method for Ischemic Stroke Subtyping Suitable for Electronic Medical Record Systems (*podium*)

International Stroke Genetics Consortium Meeting, Utrecht, Netherlands, November 2017

Advances in Stroke Care in San Diego, Medtronic Symposium, San Diego, California, United States, September 2017

7th Annual Regional Neurosciences Conference and State of the Art Stroke Summit, AtlanticCare, Atlantic City, New Jersey, United States, September 2017

Presentation (podium): Wake-up Stroke and Imaging Biomarkers in acute Stroke

European Stroke Organization Annual Conference, Prague, Czech Republic, May 2017

Presentations (podium/poster): 1) The association of adult vaccination with the risk of cerebrovascular ischemia: A systematic review and meta-analysis (*podium*); 2) Racial Disparity in Prevalence of Cerebral Microbleeds among stroke patients (*poster*)

Geisinger Stroke Symposium, Geisinger, Wilkes-Barre, Pennsylvania, United States, May 2018

Presentation (podium): Imaging Biomarkers of Stroke

International Stroke Conference, Houston, Texas, United States, February 2017

Presentations (poster): 1) Association of Antiplatelet Pretreatment With Outcomes in Acute Ischemic Stroke Patients Treated With Intravenous Thrombolysis: A Systematic Review and Meta-analysis of Randomized Clinical Trials. 2) Cerebral Microbleeds Are Associated with Higher Mortality Among Stroke Patients. 3) Efficacy and Safety of Mechanical Thrombectomy in Emergent Large Vessel Occlusions with Concomitant Cervical Internal Carotid Artery Occlusion. 4) From Zero to Stroke Elite Gold Plus in Three Years. 5) Racial Difference in Cerebral Microbleed Burden in the Mid-South United States. 6) Safety of Intravenous Alteplase in Chronic Intracranial Hemorrhage: a Five-Year Multicenter Study. 7) From the Ground to Target Stroke Elite Plus.

International Stroke Conference, Los Angeles, California, United States, February 2016

Presentations (podium/poster): 1) Supervised Learning Based Detection of Stroke and Stroke Mimic (*podium*). 2) Cerebral Microbleeds and Risk of Intracerebral Hemorrhage Post Intravenous Thrombolysis (IVT) (*podium*). 3) Hemispherectomy for Malignant MCA Syndrome: A Review of Functional Outcomes in Two High Volume Stroke Centers (*poster*). 4) Sulfonylurea Pretreatment Does Not Impact Acute Ischemic Stroke Outcomes Following Intravenous Thrombolysis (*poster*). 5) Eligibility for Mechanical Thrombectomy in Acute Ischemic Stroke: a Phase IV Multicenter Screening Log Registry (*poster*). 6) Pretreatment Systolic Blood Pressure Levels Predict Final

Infarct Volume and Early Outcomes Following Endovascular Treatment for Acute Ischemic Stroke Patients With Emergent Large Vessel Occlusion (*podium*). 7) International Multicenter Study Demonstrating Safety of Intravenous Thrombolysis in Acute Ischemic Stroke Patients Harboring Unruptured Intracranial Aneurysms (*moderated poster*).

European Stroke Organization Annual Conference (May 2015), Glasgow, Scotland, April 2015

Presentations (poster): 1) Imaging Fluid-attenuated inversion recovery (FLAIR) signal intensity as a proxy for lesion age in acute stroke. 2) FABS: A prediction tool for screening of stroke mimics in the emergency department. 3) Post-thrombolysis intracerebral hemorrhage in stroke mimic: Two cases and review of the literature. 4) Pooled Analysis and Meta-Analysis Safety of intravenous thrombolysis among stroke patients taking new oral anticoagulants – A case series and systematic review of reported cases.

International Stroke Conference, Nashville, Tennessee, United States, February 2015

Presentations (podium/poster): 1) Safety of Intravenous Thrombolysis (IVT) in Stroke Mimics: A Prospective Five-year Study and Comprehensive Meta-analysis of Reported Case Series (*podium*). 2) Cost Burden of Stroke Mimics and Transient Ischemic Attacks Following Intravenous Tissue Plasminogen Activator Treatment (*poster*). 3) Feasibility of Rapid Short Sequence Magnetic Resonance Imaging for Screening Stroke Mimics within the IV-tPA Treatment Window - A Pilot Study (*poster*). 4) Size of Patent Foramen Ovale and Recurrent Stroke: A Systematic Review and Meta-Analysis (*podium*). 5) Safety and Outcomes of Intravenous Thrombolysis (IVT) in Dissection-related Ischemic Stroke: An International Multicenter Study and Comprehensive Meta-analysis of Reported Case Series (*podium*). 6) Internet-Based Information Seeking Behavior for Transient Ischemic Attack (*poster*).

European Stroke Conference, Nice, France, May 2014

13th Annual UT-ORNL-KBRIN Bioinformatics Summit, Lake Barkley State Resort Park Cadiz, Kentucky, United States, April 2014

Presentation (podium): Context-sensitive use of bioinformatics tools with complementary functionalities for the generation of relevant hypotheses.

International Stroke Conference, San Diego, California, United States, February 2014

Presentation (poster): Association of Low Cerebral Blood Volume With Negative FLAIR Hyperintensity in Acute Ischemic Stroke.

European Stroke Conference, London, United Kingdom, April 2013

American Academy of Neurology, New Orleans, Louisiana, United States, April 2012

Presentation (poster): Subarachnoid Hemorrhage with Severe Vasospasm after Bevacizumab Therapy: A Case Report

International Stroke Conference, New Orleans, Louisiana, United States, February 2012

Presentations (poster): Misdiagnosis of Stroke among IV tPA-treated Patients: A Two-year Experience in a Primary Stroke Center and Satellite Hospitals.

International Stroke Conference, Los Angeles, California, United States, February 2011

Presentation (poster): Safety of “Drip and Ship” Intravenous Thrombolysis Protocol for Patients with Acute Ischemic Stroke.

American Academy of Neurology, Honolulu, Hawaii, United States, March 2011

Presentations (poster): 1) Genetics of Stroke: A Review of Literature Using Expert-Guided Text Mining. 2) Safety of Intravenous rt-PA within 4.5 Hours of Stroke Symptom Onset in Patients with Negative Post-Thrombolysis Diffusion-Weighted MRI.

Neurocritical Society Meeting, San Francisco, California, United States, September 2010

Presentations (poster): Safety of Intravenous rt-PA within 4.5 Hours of Stroke Symptom Onset in Patients with Negative Post-Thrombolysis Diffusion-Weighted MRI.

American Academy of Neurology, Toronto, Ontario, United States, April 2010

Presentation (poster): Using Latent Semantic Analysis to measure the association of KCNN4 and ACTA2 genes and Ischemic Stroke.

9th Annual UT-ORNL-KBRIN Bioinformatics Summit. Lake Barkley State Resort Park Cadiz,
Kentucky, United States, March 2010

Presentation (podium): Knowledge Discovery Through Large-Scale Literature-Mining of Biological Text-Data