

**CURRICULUM VITAE**

**Name:** Elizabeth A. Crago, RN, MSN, PhD  
**Title** Associate Professor  
**Citizenship** United States  
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**Education and Training****Undergraduate**

6/1982-6/1985 Diploma Nursing, Uniontown Hospital School of Nursing and Penn State University Fayette Campus, Uniontown, PA  
 1989 - 1992 B.S.N. Nursing, California University of Pennsylvania, California, PA

**Graduate**

1996-1998 M.S.N Nursing - Critical Care Clinical Nurse Specialist Track, La Roche College, Pittsburgh, PA  
 2010-2012 Ph.D. Nursing, Department of Acute and Tertiary Care, School of Nursing, University of Pittsburgh, Pittsburgh, PA.  
 Dissertation title: *The Role of Estradiol on the Development of Delayed Cerebral Ischemia after Aneurysmal Subarachnoid Hemorrhage*  
 Dr. Paula Sherwood, mentor

**Fellowships and Training****Training**

October 2001 Comprehensive Brain Anatomy and Neurological Assessment Course

**Appointments and Positions****Academic**

11/2022-current Associate Professor, Department of Acute and Tertiary Care, School of Nursing, University of Pittsburgh, Pittsburgh, PA  
 10/2022-current Associate Professor of Neurological Surgery- secondary appointment, School of Medicine, University of Pittsburgh, Pittsburgh, PA.  
 9/2015-10/2022 Assistant Professor, Department of Acute and Tertiary Care, School of Nursing, University of Pittsburgh, Pittsburgh, PA  
 8/2022-10/22 Assistant Professor of Neurological Surgery- secondary appointment, School of Medicine, University of Pittsburgh, Pittsburgh, PA.

- 9/2012 - 8/2015 Research Assistant Professor, Department of Acute and Tertiary Care, School of Nursing, University of Pittsburgh, Pittsburgh, PA.
- 2009 - 4/2012 Research Associate-Project Director, Department of Acute and Tertiary Care, School of Nursing, University of Pittsburgh, Pittsburgh, PA, *Developing Goal Directed Perfusion Therapy in SAH Neurocardiac Injury* (R01NR014221, PI: Hravnak)
- 2009-2014 Research Associate-Project Director, Department of Acute and Tertiary Care, School of Nursing, University of Pittsburgh, Pittsburgh, PA, *Determining Genetic and Biomarker Predictors of DCI and Long Term Outcomes after aSAH* (R01NR004339, PI: Sherwood)
- 2004-2009 Research Associate-Project Director, Department of Acute and Tertiary Care, School of Nursing, University of Pittsburgh, Pittsburgh, PA, *Myocardial Ischemia and Vasospasm in Aneurysmal SAH* (R01HL074316, PI: Horowitz)
- 2004-2009 Research Associate-Project Director, Department of Acute and Tertiary Care, School of Nursing, University of Pittsburgh, Pittsburgh, PA, *Role of 20-HETE on Vasospasm-Induced Ischemia after SAH* (R01NR004339, PI: Hoffman)
- 3/2000-2004 Research Associate-Project Director, Department of Acute and Tertiary Care, School of Nursing, University of Pittsburgh, Pittsburgh, PA, *Methods of Detecting Delayed Cerebral Vasospasm after Aneurysmal Subarachnoid Hemorrhage*, (R01NR004339, PI: Kerr)
- 1992-2012 Instructor: Continuing Education Nursing and Allied Health Westmoreland County Community College, Youngwood, PA

**Non-Academic**

- 2001-present Staff nurse (casual) Emergency department, Excelsa Health, Greensburg, PA
- 2001-present Educator (casual – Critical Care Class, Emergency department orientation, Stroke Education, ICP monitoring), Excelsa Health, Greensburg, PA,
- 1998 – 2000 Case Manager (Emergency department, Intensive care unit, Medical surgical unit), Westmoreland Hospital, Greensburg, PA
- 1994 – 1998 Staff nurse Emergency department, Westmoreland Hospital, Greensburg, PA
- 1992 – 1994 Assistant Nurse Manager Emergency department, Westmoreland Hospital, Greensburg, PA
- 1987 – 1992 Staff nurse Intensive care unit, Westmoreland Hospital, Greensburg, PA
- 1985 – 1987 Staff nurse Intensive care unit, Shadyside Hospital, Pittsburgh, PA
- 1985 Staff nurse Intensive care unit, Peninsula General Medical Center, Salisbury, MD

**Certification and Licensure**

- 1985 Pennsylvania State Board of Nursing, RN licensure, RN285221-L, Active
- 1985 Maryland State Board of Nursing RN licensure, Inactive

1986 American Heart Association, Advanced Cardiac Life Support Provider and Instructor, Active  
 1986 American Heart Association, Pediatric Advanced Life Support Provider and Instructor, Active  
 1992 American Association of Critical Care Nurses, Certification in Critical Care Nursing, Inactive  
 1994 Emergency Nurses Association, Certification in Emergency Nursing, Inactive

**Membership in Professional and Scientific Societies**

1990-present American Association of Critical Care Nurses  
 1992-present Emergency Nurses Association  
 2022 ENA Foundation Research Grant Committee (appointed)  
 2000-present Society of Critical Care Medicine- member nursing, research and neuroscience sections  
 2009-2011 Chair - nursing research committee  
 2013-2015 Society Research Committee (appointed)  
 2018-2021 Patient and Family Advocacy Committee (appointed)  
 2019-present Nursing Year in Review task force  
 2000-present Council for the Advancement of Nursing Science  
 2000-present Eastern Nursing Research Society  
 2004-present American Association of Neuroscience Nurses  
 Pittsburgh Chapter American Association of Neuroscience Nurses  
 2022-present Subarachnoid Hemorrhage Clinical Practice Guidelines  
 2004-present Society of Neurocritical Care  
 2011-present Sigma Theta Tau Nursing Society – Eta Chapter  
 2019 Chapter Secretary  
 2016 - present International Society of Nursing Genetics  
 2016-2018 Membership committee  
 2019-present Research committee

**Awards and Honors**

2009 Society of Critical Care Medicine Annual Scientific Award  
 2011 Society of Critical Care Medicine Presidential Citation  
 2011 Ruth Perkins Kuehn Award for Scholarship Sigma - ETA Chapter  
 2011 Nightingale of Pennsylvania Scholarship Award Doctoral Student  
 2012 Society of Critical Care Medicine Neurology Abstract Award  
 2012 Neurocritical Care Society Distinguished Abstract  
 2013 Society of Critical Care Medicine Neurology Abstract Award  
 2013 Neurocritical Care Society Distinguished Abstract Award  
 2015 Society of Critical Care Medicine Neurology Abstract Award  
 2015 Society of Critical Care Medicine Presidential Citation  
 2016 Society of Critical Care Medicine Snapshot Abstract Award  
 2017 Society of Critical Care Medicine STAR Abstract Award  
 2017 Society of Critical Care Medicine STAR Abstract Award  
 2019 Society of Critical Care Medicine STAR Abstract Award  
 2019 Society of Critical Care Medicine Neurology Abstract Award  
 2021 Society of Critical Care Medicine Neurology Abstract Award  
 2021 Deans Distinguished Teaching Award University of Pittsburgh School of Nursing

**Publications**

**Refereed Articles** \* = Data Based; £ = Senior Author; §= with student

1. \* § £ Lorenzi, L., Kerr, M.E., Yonas, H., Alexander, S., **Crago, E.** (2003). Influence of Delaying Treatment after Symptoms Develop from Subarachnoid Hemorrhage: A Preliminary Analysis. *Journal of Neuroscience Nursing*, 35(4), 210-214.
2. \* **Crago, E.**, Kerr, M.S., Kong, Y., Baldisseri, M., Horowitz, M., Yonas, H., Kassam, A. (2004). The Impact of Cardiac Complications on Outcome in the SAH Population. *Acta Neurologica Scandinavica*, 110, 248-253.
3. \* Poloyac, S.M., Crago, E., Sherwood, P., Bies, R., Hoffman, L.A., Kerr, M.E. (2005). Temporal Profile of 20-HETE, a CYP Metabolite of Arachidonic Acid, in the CSF of Subarachnoid Hemorrhage Patients. *Drug Metabolism Reviews*, 37 (4), 725.
4. \* Stippler, M., **Crago, E.**, Levy, E., Kerr, M., Yonas, H., Horowitz, M., Kassam, A. (2006). Magnesium Infusion for Vasospasm Prophylaxis after Subarachnoid Hemorrhage. *Journal of Neurosurgery*, 105, 1-7.
5. Sherwood, P., & **Crago, E.** Spiro, R., Okonkwo, D. (Cover article) (2007). Cervical Spine Injuries: Preserving Function, Improving Outcomes. *American Nurse Today*, 2, 26-29.
6. \* Gupta, R., **Crago, E.**, Gallek, M., Hoffman, L., Horowitz, M., Yonas, H. (2008). Reduced Ipsilateral Hemispheric Cerebral Blood Flow at Admission is Predictive of Vasospasm with Infarction after Aneurysmal Subarachnoid Hemorrhage. *NeuroCritical Care*, 9 (1), 27-30.
7. \* § Barr, T., Alexander, S., Kerr, M.E., **Crago, E.**, Horowitz, M.B., Yonas, H. (2008). The Impact of Endovascular Coiling Versus Surgical Clipping on Functional Outcome Following Intracranial Aneurysm Rupture. *Neurosurgery Quarterly*, 18 (1), 16-21.
8. \* Kim, SR., Vora, N., Jovin, T.G., Gupta, R., Tomas, A., Kassam A., Lee, K., Gologorsky, Y., Jankowitz, B., Panapitiya, N., Aleu, A., Sandhu, E., **Crago, E.**, Hricik, A., Gallek, M., Horowitz, M.B. (2008). Anatomic Results and Complications of Stent-assisted Coil Embolization of Intracranial Aneurysms. *Interventional Neuroradiology*, 14, (3), 267-84.
9. \* Jankowitz, B., Thomas, A., Vora, N., Gupta, R., Soong-Rim, K., Levy, E., Yamamoto, J., Kassam, A., Gologorsky, Y., Sandur, E., Panapitiya, N., **Crago E.**, Hricik, A., Lee, K., Gallek, M., Jovin, T., Horowitz, M.B. (2008). Risk of Hemorrhage and Stroke in Combined Neuroform Stenting and Coil Embolization of Acutely Ruptured Aneurysms. *Interventional Radiology*, 14, 385-396.
10. \* § Hamilton, J., Korn-Naveh, L., **Crago, E.** (Continuing Education Article) (2008). Myocardial Dysfunction after Acute Aneurysmal Subarachnoid Hemorrhage: Case Studies. *Journal of Neuroscience Nursing*, 40 (5), 269-274.
11. § Carwile, E., Wagner, A., **Crago, E.**, Alexander, S. (Continuing Ed. Article) (2009). Estrogen and Stroke: A Review of the Current Literature. *Journal of Neuroscience Nursing*, 41(1), 18-25.
12. \* Tanabe, M., **Crago, E.**, Suffoletto, M., Hravnak, M., Kassam, A., Horowitz, M., Gorcsan, J. Clinical Significance of Cardiac Troponin-I Elevations in Patients with Aneurysmal Subarachnoid Hemorrhage. (2008). *American Journal of Cardiology*, 102, 1545-50.
13. \* Frangiskakis, J.M., Hravnak, M., **Crago, E.**, Tanabe, M., Kip, K., Gorcsan, J., Kassam, A., Horowitz, M., London, B. (2009). Ventricular Arrhythmia Risk after Subarachnoid Hemorrhage. *NeuroCritical Care*, 10 (3), 287-294.
14. \* Hravnak, M., Frangiskakis, M., **Crago, E.**, Chang, Y., Tanabe, M., Gorcsan, J., Horowitz, M. (2009). Elevated Cardiac Troponin I and Relationship to Persistence of Electrocardiographic and Echocardiographic Abnormalities After Aneurysmal Subarachnoid Hemorrhage. *Stroke*, 40 (11), 3478-3484.
15. \* Miller, T., Donnelly, M., **Crago, E.**, Roman, D., Sherwood, P., Horowitz, M., Poloyac, S. (2009). Rapid, Simultaneous Quantitation of Mono and Deoxygenated Metabolites of Arachidonic Acid in Human CSF and Rat Brain. *Journal Chromatography B: Biomedical Sciences and Applications*, 877(31), 3991-4000.

16. \* Newberry, A., Sherwood, P., Hricik, A., Bradley, S., Kuo, J., **Crago, E.**, Hoffman, L., Given, B. (2010). Understanding Recruitment and Retention in Neurological Research. *Journal of Neuroscience Nursing*, 42 (1), 47-57.
17. \* £ Miketic, J., Hravnak, M., Sereika, S., **Crago, E.** (2010). Relationship between Elevated Cardiac Troponin I and Functional Recovery and Disability in Patients after Aneurysmal Subarachnoid Hemorrhage. *American Journal of Critical Care*, 19 (6), 522-528.
18. \*§ Yousef, K., **Crago, E.**, Kuo, C.J., Horowitz, M., Hravnak, M. (2010). Predictors of Delayed Cerebral Ischemia after Aneurysmal Subarachnoid Hemorrhage: A Cardiac Focus. *NeuroCritical Care*, 13, 366-372.
19. \* Kanaan, H., Jankowitz, B., Aleu, A., Kostov, D., Lin, R., Lee, K., Panapitiya, N., Gologorsky, Y., Sandhu, E., Rissman, L., **Crago, E.**, Chang, Y., Kim, S., Jovin, T., Horowitz, M. (2010). In-Stent Thrombosis and Stenosis after Neck-Remodeling Device-Assisted Coil Embolization of Intracranial Aneurysms. *Neurosurgery*, 67 (6), 1523-32.
20. \*§ Thampatty, B., Sherwood, P., Gallek, M., **Crago, E.**, Ren, D., Hricik, A., Kuo, J., Klamerus, M., Alexander, S., Bender, C., Hoffman, L., Horowitz, M., Kassam, A., Poloyac, S. (2011). Role of Endothelin-1 in Human Aneurysmal Subarachnoid Hemorrhage: Associations with Vasospasm and Delayed Cerebral Ischemia. *Neurocritical Care*, 15(1),19-27.
21. \* **Crago, E.**, Thampatty, B., Sherwood, P., Kuo, C., Bender, C., Balzer, J., Horowitz, M., Poloyac, S. (2011). CSF 20-HETE is Associated with Delayed Cerebral Ischemia and Poor Outcomes after Aneurysmal Subarachnoid Hemorrhage. *Stroke*, 42 (7), 1872-7.
22. \* § Adkins,K., **Crago, E.**, Kuo,C. J., Horowitz, M., Sherwood, P. (2012) Correlation Between Emergency Department Symptoms and Clinical Outcomes in the Patient with Aneurysmal Subarachnoid Hemorrhage. *Journal of Emergency Nursing*, 38 (3), 226-233.
23. \* Kim, H., **Crago, E.**, Kim, M., Sherwood, P., Conley, Y., Poloyac, S., Kerr, M. (2013). Cerebral Vasospasm after Subarachnoid Hemorrhage as a Clinical Predictor and Phenotype for Genetic Association Study. *International Journal of Stroke*, 8 (8). 10.1111/j.1747-4949.2012.00823.PMCID PMC3475757
24. \* § Gallek, M., Alexander, S., **Crago, E.**, Sherwood, P., Horowitz, M., Poloyac, S., Conley, Y. (2013). Endothelin-1 and Endothelin Receptor Gene Variants and Their Association with Negative Outcomes Following Aneurysmal Subarachnoid Hemorrhage. *Biologic Research Nursing*, 15 (4), 390-397. PMID: 24852947
25. \* **Crago, E.**, Kerris, K., Kuo, C.J., Sherwood, P., Hravnak, M., Crippen, D., Horowitz, M. (2014). The Effect of Beta Blockers and Ace Inhibitors on Cardiac Abnormalities after Aneurysmal Subarachnoid Hemorrhage. *American Journal of Critical Care*, 23 (1), 30-9. PMID: 24382615
26. \* Kantor, E., Bayir, H., Ren, D., Provencio, J., Watkins, L., **Crago, E.**, Horowitz, M., Conley, Y., Alexander, S. (2014). Haptoglobin Genotype and Functional Outcome after Aneurysmal Subarachnoid Hemorrhage. *Journal of Neurosurgery*, 120 (2), 386-390. doi: 10.3171/2013.10.JNS13219. PMID: 24286153.
27. \* Yousef, K., Balzer, J., **Crago, E.**, Poloyac, S., Sherwood, P. (2014). Transcranial Regional Cerebral Oxygen Desaturation Predicts Delayed Cerebral Ischemia and Poor Outcomes After Subarachnoid Hemorrhage: A Correlational Study. *Intensive & Critical Care Nursing*, 30(6), 346-52. DOI: 10.1016/j.iccn.2014.05.001. PMID: 24933608.
28. \* **Crago, E.**, Sherwood, P., Bender, C., Balzer, J., Ren, D., Poloyac, S. (2015). Plasma Estrogen Levels Are Associated with Severity of Injury and Outcomes after Aneurysmal Subarachnoid Hemorrhage. *Biological Research in Nursing*, 17(5), 558-566. doi:101177/1099800414561632. PMID: 25548393.
29. \* § Donnelly, M.K., Conley, Y.P, **Crago, E.A.**, Ren, D., Sherwood, P.R., Balzer, J.R., Poloyac, S.M. (2015). Genetic Markers in the EET Metabolic Pathway Are Associated with Outcomes in Patients with Aneurysmal Subarachnoid Hemorrhage. *Journal of Cerebral Blood Flow Metabolism*, 35 (2), 267-76. doi: 10.1038/jcbfm.2014.195. PMID: 25388680.

30. \* § Donnelly, M.K., **Crago, E.A.**, Conley, Y.P., Balzer, J.R., Ren, D., Ducruet, A.F., Kohanek, P.M., Sherwood, P.R., Poloyac, S.M. (2015). 20-HETE is Associated with Unfavorable Outcomes in Subarachnoid Hemorrhage Patients. *Journal of Cerebral Blood Flow Metabolism*, 35(9),1515-22. doi: 10.1038/jcbfm.2015.75. PMID: 25920956.
31. Al-Zaiti, S., **Crago, E.**, Hravnak, M., Kozik, T., Pelter, M., Carey, M. (2015). Cardiac Dysfunction after Neurologic Injury. *American Journal of Critical Care*, 24(5), 453-4. doi: 10.4037/ajcc2015618. PMID: 26330440.
32. \*§ **Crago, E.**, Price, T.J., Bender, C., Ren, D., Poloyac, S., Sherwood, P. (2016). Impaired Work Productivity Following Aneurysmal Subarachnoid Hemorrhage. *Journal of Neuroscience Nursing*, 48(5), 260-268. doi:10.1097/JNN.0000000000000209.
33. \* Panczykowski, D., Pease, M., Zhao, Y., Weiner, G., **Crago, E.**, Jankowitz, B., Ducruet, A. (2016). Prophylactic Antiepileptic Medications and Seizure Incidence Following Subarachnoid Hemorrhage: A Propensity Score-Matched Analysis. *Stroke*, 47(7), 1754-60. doi: 10.1161/STROKEAHA.116.013766. PMID: 27301932.
34. \* § McAteer, A., Hravnak, M., Chang, Y., **Crago, E.**, Gallek, M., Yousef, K. (2017). The Relationship Between BNP, Neurocardiac Injury Severity, Noninvasive Cardiac Output, and Outcomes after Aneurysmal Subarachnoid Hemorrhage *Biological Research in Nursing*, 19 (5):531-537. doi: 10.1177/1099800417711584. PMID: 28627225.
35. \* Yousef, K.M., **Crago, E.A.**, Lagatutta, T.F., Hravnak, M. (2018). Clinical Presentation to the Emergency Department Predicts Subarachnoid Hemorrhage – Associated Myocardial Injury. *Journal of Emergency Nursing*, 44(2), 132-138. doi: 10.1177/1099800417711584. PMID: 28712527.
36. \* Stanfill, A., Simpson, C., Sherwood, P., Poloyac, S., **Crago, E.**, Kim, H., Conley, Y. (2017). A Pilot Study on the Impact of Dopamine, Serotonin, and BDNF Genotype on Long Term Functional Outcomes after Subarachnoid Hemorrhage. *SAGE Open Medicine*. 2017; 5:2050312117726725. doi: 10.1177/2050312117726725.
37. \* § Heinsberg L., Turi, E., Ren, D., **Crago, E.**, Alexander, S., Stanfill, A., Conley, Y. (2018). Evaluation of APOE Genotype and Ability to Perform Activities of Daily Living Following Aneurysmal Subarachnoid Hemorrhage. *Biologic Research in Nursing*, 20 (2): 177-182. doi: 10.1177/1099800417746504. PMID: 29258400.
38. \* Yousef, K., **Crago, E.**, Chang, Y., Lagattuta, T., Mahmoud, K., Shutter, L., Balzer, J., Pinsky, M., Friedlander, R., Hravnak, M. (2018). Vasopressor Infusion after Subarachnoid Hemorrhage Does Not Increase Regional Cerebral Tissue Oxygenation. *Journal of Neuroscience Nursing*, 50(4): 225-230. doi: 10.1097/JNN.0000000000000382. PMID: 29985275.
39. \* § Turi, E., Conley, Y., **Crago, E.**, Sherwood, P., Poloyac, S., Ren, D., Stanfill, A. (2019). Psychosocial Comorbidities Related to Return to Work Rates Following Aneurysmal Subarachnoid Hemorrhage. *Journal of Occupational Rehabilitation*, 29(1):2015-211. doi:10.1007/s10926-018-9780-z. PMID: 29781055.
40. \* Kagiyama N, Sugahara M, Crago EA, Qi Z, Lagattuta TF, Yousef KM, Friedlander RM, Hravnak MT, Gorcsan J 3rd. Neurocardiac Injury Assessed by Strain Imaging Is Associated With In-Hospital Mortality in Patients With Subarachnoid Hemorrhage. *JACC Cardiovasc Imaging*. 2020 Feb;13(2 Pt 2):535-546. doi: 10.1016/j.jcmg.2019.02.023. Epub 2019 May 15. PMID: 31103578.
41. \* § Heinsberg, L.W., Arockiaraj, A.I., **Crago, E.A.**, Ren, D., Shaffer, J.R., Sherwood, P.R., Sereika, S.M., Weeks, D.E., Conley, Y.P. (2020). Genetic Variability and Trajectories of DNA Methylation May Support a Role for HAMP in Patient Outcomes after Aneurysmal Subarachnoid Hemorrhage. *NeuroCritical Care*, 32(2): 550-563. doi:10.1007/s12028-019-00787-4. PMID: 31346934.
42. \* § £ Heinsberg LW, Bender CM, Rohay JM, Sherwood PR, **Crago EA.** Psychometric Properties of the Patient Assessment of Own Functioning Inventory Following Aneurysmal Subarachnoid Hemorrhage. (2020). *J Nurs Meas*, 28(2):205-228. PMID: 32341171.

43. \* § Heinsberg, L.W., Alexander, S.A., **Crago, E.A.**, Minster, R., Poloyac, S.M., Weeks, D.E., Conley, Y.P. (2020). Genetic Variability in the Iron Homeostasis Pathway and Patient Outcomes after Aneurysmal Subarachnoid Hemorrhage. *NeuroCritical Care*, 33(3): 749-758. doi:10.1007/s12028-020-00961-z. PMID: 32246437.
44. \*§ Heinsberg, L.W., Weeks, D.E., Alexander, S.A., Minster, R.L., Sherwood PR, Poloyac SM, Deslouches S, **Crago EA**, Conley YP. (2021). Iron Homeostasis Pathway DNA Methylation Trajectories Reveal a Role for STEAP3 Metalloreductase in Patient Outcomes after Aneurysmal Subarachnoid Hemorrhage. *Epigenetic Communications*, 1:4. doi:10.1186/s43682-021-00003-5.conley
45. \*Liu, D., Arockiaraj, A., Shaffer, J., Poloyac, S., Sherwood, P., Alexander, S., **Crago, E.**, Weeks, D., Conley, Y. (2021). *ANGPT1* Methylation is Associated with Delayed Cerebral Ischemia after Acute Subarachnoid Hemorrhage – An Epigenome-wide Association Study. *Epigenetics Communications*, 1:3. Doi.org/10.1186/s43682-021-00001-7.
46. Bedner, K., **Crago, E.** (2022). What a Rat Race-A Case Study of Rat Bite Fever in an Emergency Department. *Journal of Emergency Nursing*, 48 (5):583-585. doi: 10.1016/j.jen.2022.07.001. PMID: 35963786.
47. Mittal, A., Pease, M., McCarthy, D., Legarretta, A., Belkhir, R., **Crago, E.**, Lang, M., Gross, B. (2023). *Hunt-Hess Score at 48 hours Improves Prognostication in Grade 5 Aneurysmal Subarachnoid Hemorrhage*. *World Neurosurgery*. Mar; 171:e874-e878. doi:10.1016/j.wneu.2023.01.018. PMID: 36627019.
48. \*§Belkhir JR, Pease M, McCarthy DJ, Legarretta A, Mittal AM, **Crago EA**, Gross BA, Lang MJ. Subarachnoid Hemorrhage Outcomes in an Endovascular Right of First Refusal Neurosurgical Environment. *World Neurosurg*. 2024 Jan;181:e524-e532. doi: 10.1016/j.wneu.2023.10.091. Epub 2023 Oct 23. PMID: 37879435; PMCID: PMC10842161.

## In Review

1. \* **Crago, E.**, Kagiya, N., Sugahara, M., Fisher, A., Lagattuta, T., Friedlander, R., Hravnak, M., Gorcsan, J. (In Review). *Neurocardiac Injury Assessed by Strain Imaging is Associated with 12-month Outcomes in Patients with Aneurysmal Subarachnoid Hemorrhage*. *JACC Cardiovascular Imaging*.2023.
2. \* **Crago, E.**, Miller, T., Kagiya, N., Sugahara, M., Fisher, A., Friedlander, R., Hravnak, M., Gorcsan, J. (In Review). *The Relationship Between Circulating Estrogen levels and Neurocardiac Injury Assessed by Strain Imaging in Patients with Aneurysmal Subarachnoid Hemorrhage*. *Journal of Clinical Endocrinology and Metabolism*.2023.

## Published Abstracts

1. \*Kerr M., Nemoto, E., Yonas, H., Kassam, A., **Crago, E.**, Alexander, S. (2000). Vasospasm Detection Following SAH Using Cerebral Oximetry. [Abstract]. *Critical Care Medicine*, 28(Suppl. 12) A208.
2. \***Crago E.**, Kerr, M., Kassam, A., Yonas, H. (2000). Clinical Presentation of Fever, Vasospasm and Clinical Neurologic Deterioration Following Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 28(Suppl. 12) A206.
3. \* § Lorenzi, L., Kerr, M.E., Yonas, H., Kassam, A., Alexander, S., **Crago, E.** (2000). Delaying Treatment after Symptoms Develop from Subarachnoid Hemorrhage (SAH) on Outcome: A Preliminary Analysis. [Abstract]. *Critical Care Medicine*, 28(Suppl. 12) A209.
4. \*Ward, S., Valenta, C., **Crago, E.**, Michalic, D., Mitchell-Perry, R., Reilly, E., Kerr, M.E., Yonas, H. (2000). Implementation and Evaluation of a Neurologic Data Set for the SAH Patient. [Abstract]. *Critical Care Medicine*, 28(Suppl. 12,) A210.

5. \* **§ Crago, E.**, Kerr, M.E., Fails, M., Yonas, H. (2001). Effect of preexisting cardiac disease on cardiac complications, angiographic vasospasm and neurological deterioration following subarachnoid hemorrhage. [Abstract]. *Critical Care Medicine*, 29(Suppl. 12), A33.
6. \*Kerr, M.E., **Crago, E.**, Alexander, S., Kim, Y., Kamboh, I, & Marion, D. (2002). Conditions Associated with Neurologic Deterioration in the SAH Patient. [Abstract]. *Critical Care Medicine*, 30(Suppl. 12), A5.
7. \***Crago, E.**, Kerr, M.E., Baldesseri, M., Horowitz, M., Kassam, A., Yonas, H. (2002). Impact of Cardiac Complications on Outcomes in Patients with Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 30(Suppl. 12), A6.
8. \***Crago, E.**, Kong, Y., Kerr, M., Yonas, H., Horowitz, M., & Kassam, A. (2003). Relationship Between Aneurysm Site and Outcomes Following Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 31(Suppl. 12), A15.
9. \*Beatty, M., Kerr, M., Condon, I., Kong, Y., Alexander, S., **Crago, E.**, Horowitz, M., Yonas, H. (2003). Comparison of Coiling Verses Clipping on 6-Month Outcomes Following Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 31(Suppl. 12), A90.
10. \*Kong, Y., Kerr, M., **Crago, E.**, & Yonas, H. (2003). A Multifactoral Model and Lindegaard Ratio for Vasospasm Prediction Following Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 31(Suppl. 12), A94.
11. \***Crago E.**, Kerr, M.E., Levy, E., Horowitz, M., Yonas, H., Kassam, A., Stippler, M., (2004). Effect of Continuous Magnesium Infusion on Cerebral Vasospasm and 3-month Outcomes Following Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 32(Suppl. 12), A19.
12. \*Poloyac, S., **Crago, E.**, Sherwood, P., Bies, R., Hoffman, L.A., Kerr, M.E. (2005). Temporal Profile of 20-HETE, a CYP Metabolite of Arachidonic Acid, in the CSF of Subarachnoid Hemorrhage Patients. [Abstract]. *Drug Metabolism Reviews*, 37, 725.
13. \*Hravnak, M., **Crago, E.**, Kong, Y., Hricik, A., Horowitz, M. (2005). Relationship Between Race, Vasospasm and Outcomes in African-American and Caucasian Patients with Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 33(Suppl. 12), A22.
14. \***Crago, E.**, Hravnak, M., Kong, Y., Sherwood, P., Horowitz, M. (2005). Relationship of Catecholamines on Markers of Myocardial Ischemia in Patients with Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 33(Suppl. 12), A 102.
15. \*Tanabe, M., Horowitz, M.B., Cannesson, M., Hravnak, M., **Crago, E.A.**, Gorcsan, J. (2006). The Relationship between Regional Left Ventricular Wall Motion and Troponin-I Levels in Patients with Subarachnoid Hemorrhage: Results of the SAHMII study. [Abstract]. *Journal of American College of Cardiology*.
16. \*Hravnak, M., **Crago, E.**, Kong, Y., Horowitz, M.B. (May 2006). Prevalence of Electrocardiographic Abnormalities in Patients with Subarachnoid Hemorrhage. Oral Abstract Award Winner, American Association of Critical Care Nurses National Teaching Institute, Anaheim, California. [Abstract]. *American Journal of Critical Care*, 15, 324.
17. \*Hravnak, M., **Crago, E.**, Horowitz, M. (2006). Prolonged QT Interval after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 34(Suppl. 12), A81.
18. \*Hravnak, M., **Crago, E.**, Horowitz, M. (2007). Relationship between Serum Glucose and Outcomes in Patients with Subarachnoid Hemorrhage. [Abstract]. *American Journal of Critical Care*.
19. \*Tanabe, M., **Crago, E.A.**, Hravnak, M., Horowitz, M.B., Gorcsan, J. (2007). Relationship of Mild Troponin-I Elevations to Cardiac Function and Pulmonary Congestion in Patients with Subarachnoid Hemorrhage: Results of the SAHMII Study. [Abstract]. *Journal of the American College of Cardiology*, 49 (Suppl. 1), 338A.
20. \*Tanabe, M., **Crago, E.A.**, Hravnak, M., Horowitz, M.B., Gorcsan J. (2007). Relationship of Acute Cardiac Dysfunction with Clinical Severity of Subarachnoid Hemorrhage: Results of the SAHMII study. [Abstract]. *Journal of the American College of Cardiology*, 49 (Suppl. 1), 338A.



21. \***Crago, E.**, Gupta, R., Gallek, M., Chang, Y., Horowitz, M., Yonas, H. (2006). Early lower Global Hemispheric CBF on Initial Xenon CT in Patients with Aneurysmal Subarachnoid Hemorrhage is Predictive of Poor 3-month Outcomes. [Abstract]. *Critical Care Medicine*, 34 (Suppl. 12), A81.
22. \***Crago, E.**, Gupta, R., Gallek, M., Chang, Y., Horowitz, M., Yonas, H. (2006). Early Lower Ipsilateral Hemispheric Cerebral Vasospasm after Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 32(Suppl. 12), A82.
23. \* § Gallek, M., Sherwood, P., **Crago, E.**, Alexander, S., Hoffman, L., Horowitz, M., Poloyac, S. (2006). Endothelin-1 Cerebrospinal Fluid Levels are Associated with the Development of Cerebral Vasospasm in Aneurysmal Subarachnoid Hemorrhage Patients. [Abstract]. *Critical Care Medicine*, 32(Suppl. 12), A80.
24. \*Hravnak, M., **Crago, E.**, Hricik, A, Horowitz, M.B. (2007) Relationship between Serum Glucose and Outcomes in Patients with Subarachnoid Hemorrhage. [Abstract]. *American Journal of Critical Care*, 16, 303. (AACN Research Abstract Award Winner 2007).
25. \*Sherwood, P., **Crago, E.**, Gallek, M., Hricik, A., Ren, D., Hoffman, L., Poloyac, S. (2007). Endothelin and Neuropsychological Outcomes in Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 35 (Suppl. 12), A202.
26. \***Crago, E.**, Sherwood, P., Tanabe, M., Hricik, A., Chang, Y., Hravnak M., Horowitz, M., Kassam, A., Gorcsan J., Bender, C. (2007). The Relationship between Myocardial Dysfunction and 12-Month Neuropsychological Outcomes in Patients Following Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 35 (Suppl. 12), A204.
27. \*Hravnak, M., **Crago, E.**, Miketic, J., Chang, Y., Horowitz, M. (2008). Admission Serum Glucose and Outcomes in Patients with Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 35(Suppl. 12), A12.
28. \*Hricik, A.J., **Crago, E.A.**, Bender, C.M., Lu, X., Kassam, A.B., Horowitz, M.B., Hoffman, L.A. (2007). Coiling Versus Clipping Following Subarachnoid Hemorrhage: 3 & 12-month Evaluation of Neuropsychological Outcomes. [Abstract]. *Critical Care Medicine*, 35(Suppl. 12), A165.
29. \***Crago, E.**, Sherwood, P., Kuo, J., Hricik, A., Horowitz, M., Kassam, A., Poloyac, S. (2008). Cerebrospinal Fluid 20-HETE is Associated with Poor Neuropsychological Outcomes After Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 36(Suppl. 12), A10. (Winner of Society of Critical Care Research Award 2009).
30. \*Hravnak, M., **Crago, E.**, Frangiskakis, M., Chang, Y., Gorcsan, J., Horowitz, M. (2008). Relationship between Left Ventricular Motion Abnormalities and Markers of Neurocardiac Injury in Patients with Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 36(Suppl. 12), A10. (Winner of Society of Critical Care Research Award 2009).
31. \* § **Crago, E.**, Adkins, K., Kuo, C., Horowitz, M., Sherwood, P. (2009). Initial Symptom Presentation as a Predictor of Mortality and Length of Stay in the Patient with Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 37(Suppl. 12), A159.
32. \*Yousef, K., **Crago, E.**, Kuo, C., Hravnak, M. (2009). Predictors of Ventricular Ectopy after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 37(Suppl. 12), A158.
33. \*Hravnak, M., Poloyac, S., Yao, J., **Crago, E.**, Chang, Y., Gorcsan, Y., Horowitz, M. (2009). Relationship between Catecholamines and Neurocardiac Injury in Patients with Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 37(Suppl. 12), A152.
34. \*Alexander, S., Poloyac, S., Ren, D., **Crago, E.**, Conley, Y. (2009). DDAH2 Genotype Predicts Outcome After Subarachnoid Hemorrhage. *Critical Care Medicine*, 37(Suppl. 12), A156.
35. \*Watkins, L., Alexander, S., Ren, D., **Crago, E.**, Conley, Y., Kagan, V., Bayir, H. (2009). Haptoglobins Containing A2 Subunit Favor Angiographic Vasospasm in Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 37(Suppl. 12), A19.
36. \*Kantor, E., Conley, Y., Ren, D., Bayir, H., Provencio, J., **Crago, E.**, Horowitz, M., Alexander, S. (2009). Haptoglobin Genotype and Functional Outcome after Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 37(Suppl. 12), A368.

37. \*Yousef, K., **Crago, E.**, Kuo, C., Horowitz, M., Hravnak, M. (2010). Elevated Intracranial Pressure Predicts Poor Function and Death after Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 37(Suppl. 12), 327.
38. \***Crago, E.**, Kuo, C., Sherwood, P., Horowitz, M., Poloyac, S. (2010). Cerebrospinal Fluid 20-Hydroxyicosatetraenoic Acid is Associated with Delayed Cerebral Ischemia and Poor Outcomes after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 38(Suppl. 12), 147.
39. \*Hravnak, M., Thampatty, B., Poloyac, S., Yao, J., **Crago, E.**, Horowitz, M. (2010). Persistence of Monoamines in Aneurysmal Subarachnoid Hemorrhage Patients with Myocardial Injury. [Abstract]. *Critical Care Medicine*, 38(Suppl. 12), 318.
40. \*Watkins, L., Alexander, S., Alexandr, K., Ren, D., **Crago, E.**, Conley, Y., Kaga, V., Bayir, H. (2010). Possible Role for Haptoglobin and Hemoglobin Aggregates in Patho-mechanism of Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 38(Suppl. 12), 154.
41. \* § Yousef, K, **Crago, E.**, Hamilton, J., Duursma, M., Colorito, P., Balzer, J., Sherwood, P. (2011). Relationship between Mean Arterial Pressure and Cerebral Blood Flow Velocities in Patients with Subarachnoid Hemorrhage. [Abstract]. *Neurocritical Care*, 15, S120.
42. \* § **Crago, E.**, Donnelly, M., Sherwood, P., Kuo, C., Balzer, J., Horowitz, M., Poloyac, S. (2011). The Association of Metabolites of Arachidonic Acid in CSF on the Incidence of Delayed Cerebral Ischemia after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Neurocritical Care*, 15, S36.
43. \*Hravnak, M., Thampatty, B., Poloyac, S., Yao, J., **Crago, E.**, Horowitz, M. (2011). Persistently Elevated Monoamines are Associated with Severity of Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Intensive Care Medicine*, 37 [Suppl 1], S30.
44. \* § **Crago, E.**, Donnelly M., Ren, D., Sherwood, P., Horowitz, M., Poloyac, S. (2011). Cerebrospinal Fluid 11-12 and 14-15 DHET after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 39 (12), 305.
45. \*Hravnak, M., Thampatty, B., Poloyac, S., Yao, J, **Crago, E.**, Horowitz, M. (2011). Monoamine Relationship to Blood Load Following Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 39 (12), 1. (Winner Society of Critical Care Medicine Neurology Award, 2012).
46. \*§ Yousef, K., Kuo, C., **Crago, E.**, Balzer, J., Poloyac, S., Sherwood, P. (2011). The Impact of Sodium Level on Neurologic Deterioration after Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 39 (12), 314.
47. Thampatty, B., Poloyac, S., Yao, J., **Crago, E.**, Horowitz, M., Hravnak, M. (2011). Endogenous Monoamine Metabolites and Relationship to Gender after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 39 (12), 147.
48. \*Yousef, K., Choi, C.J., **Crago, E.**, Poloyac, S., Balzer, J., Sherwood, P. (2012). Aneurysmal Subarachnoid Hemorrhage: Comparing the Performance of Grading Scales in Predicting Complications and Outcomes. [Abstract]. *Neurocritical Care*; 17: S1-S337, page S49. (Distinguished Abstract)
49. \***Crago, E.**, Sherwood, P., Bender, C., Balzer, G., Ren, D., Poloyac, S. (2012). The Association of Cerebrospinal Fluid Estrogen Levels to Injury and Outcomes after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Neurocritical Care*; 17: S1-S337, page S299.
50. \*Hravnak, M., Chang, Y., **Crago, E.**, Price, T., Horowitz, M. (2012). Impact of Myocardial Injury after Subarachnoid Hemorrhage (SAHMI) Upon Perfusion. [Abstract]. *Critical Care Medicine*, 40(12), 1-328, December 2012. (Winner Society of Critical Care Medicine Neurology Award, 2013).
51. \***Crago, E.**, Sherwood, P., Bender, C., Balzer, J., Ren, D., Poloyac, S. (2012) The Relationship between Plasma Estrogen Levels and Severity of Injury and Delayed Cerebral Ischemia after Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 40(12), 1-328, December 2012.

52. \*§ Yousef, K., Balzer, J., **Crago, E.**, Poloyac, S., Sherwood, P. (2012) Transcranial Regional Cerebral Oxygen Desaturation Predicts Delayed Cerebral Ischemia and Poor Outcomes After Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*, 40(12), 1-328, December 2012.
53. \* **Crago, E.**, Sherwood, P., Bender, C., Balzer, J., Ren, D., Poloyac, S. (2013). Plasma Estrogen Levels are Associated with Adverse Outcomes Following Acute Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Neurocritical Care*; 19: S1-S331, page S31. (*DISTINGUISHED ABSTRACT*)
54. \*Hravnak, M., Chang, Y.; Price, T.J.; **Crago, E.**, Jankowitz, B., Friedlander, R.M. (2013) Cerebral Perfusion Pressure is Lower in Patients with Myocardial Injury after Subarachnoid Hemorrhage. [Abstract]. *Intensive Care Medicine*. 39(2), S216.
55. \* § Donnelly, M., Conley, Y., Crago, E., Sherwood, P., Balzer, J., Poloyac, S. (2013). Association of SNPS on Genes Affecting EET Levels and Delayed Cerebral Ischemia in aSAH Patients. [Abstract]. *Critical Care Medicine*, 41(12), A63.
56. \*Hravnak, M., Chang, Y., **Crago, E.** (2014). Impact of Age on Perfusion Abnormalities in Patients with Myocardial Injury after Subarachnoid Hemorrhage [Abstract]. *Critical Care Medicine*, 42 (12), A1492. (Winner Society of Critical Care Medicine Abstract Award, 2015).
57. \***Crago, E.**, Price, T., Horowitz, M. (2014). The Effect of Aneurysmal Subarachnoid Hemorrhage on Work Productivity. [Abstract]. *Critical Care Medicine*, 42(12) A1376. (Winner Society of Critical Care Medicine Neurology Award, 2015).
58. \*Yousef, K., **Crago, E.**, Price, T., Lagatutta, T., Sherwood, P. (2014). Vasopressors Do Not Improve Outcomes of Delayed Cerebral Ischemia after Subarachnoid Hemorrhage [Abstract]. *Critical Care Medicine*, 42(12) A1490.
59. Yousef, K.M., Lagatutta, T.F., Chang, Y., **Crago, E.**, Pinsky, M.R., Hravnak, M. (2015). The Impact of Norepinephrine Administration on Cerebral and Peripheral Tissue Oxygen Saturation after Subarachnoid Hemorrhage. [Abstract]. *Neurocritical Care*; 23 Supplement: S227.
60. \***Crago, E.**, Chang, Y., Yousef, K., Lagatutta, T., Poloyac, S., Hravnak, M. (2015). Elevated Plasma Estrogen Levels are Associated with Neurocardiac Injury after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Neurocritical Care*; 23 Supplement: S7.
61. \*§ **Crago, E.**, Yousef, K., Chang, Y., Lagatutta, T., Hravnak M. (2015). Relationship between Cerebral Tissue Oxygenation and Cardiac Output after Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*; 43(12 Suppl 1):120-121.
62. \***Crago, E.**, Yabes, J., Balzer, J., Triulzi, L., Ducruet, A., Sherwood, P., Poloyac, S. (2015). Aneurysmal Subarachnoid Hemorrhage Patients with Elevated 20-HETE have Higher Lindgaard Ratios. [Abstract]. (Winner Snapshot Abstract Award). *Critical Care Medicine*; 43(12 Suppl 1):118.
63. \*§ Hravnak, M., Yousef, K., Chang, Y., **Crago, E.**, Lagatutta, T., Pinsky, M.R. (2015). Non-invasive Cardiac Output Monitoring to Evaluate Neurocardiac Injury after Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*; 43(12 Suppl 1):123.
64. \*Qi, Z., Sugahara, M., **Crago, E.A.**, Chang, Y.F., Lagatutta, T.F., Yousef, K., Friedlander, R.M., Hravnak, M.T., Gorcsan, J. (2016). Association of Global Longitudinal Strain with Severity of Neurocardiac Injury in Patients with Subarachnoid Hemorrhage. [Abstract]. *Am Coll Cardiol*. 2016, 67(13\_S):1610-1610. doi: 10.1016/S0735-1097(16)31611-4.
65. \*Qi, Z., Sugahara, M., **Crago, E.A.**, Chang, Y.F., Lagatutta, T.F., Yousef, K., Friedlander, R.M., Hravnak, M.T., Gorcsan, J. (2016). Neurocardiac Injury in Patients with Subarachnoid Hemorrhage is Associated with Regional Left Ventricular Discoordination. [Abstract]. *J Am Coll Cardiol* 2016; 67 (13\_S): 1460-1460. 10.1016/S0735-1097(16)31461-9.
66. \*Qi, Z., Sugahara, M., **Crago, E.A.**, Chang, Y., Lagatutta, T.F., Yousef, K., Friedlander, R.M., Hravnak, M.T., Gorcsan, J. (2016). Changes in Echocardiographic Global Longitudinal Strain are Associated with Degree of Neurocardiac Injury in Patients with Subarachnoid Hemorrhage. [Abstract]. *J Am Soc Echocardiogr*. 2016 Jun;29(6): B88.

67. \*Qi, Z., Sugahara, M., **Crago, E.A.**, Chang, Y., Lagattuta, T.F., Yousef, K., Friedlander, R.M., Hravnak, M.T., Gorcsan, J. (2016). Dispersion of Left Ventricular Segmental Peak Longitudinal Strain as a New Marker of Neurocardiac Injury in Patients with Subarachnoid Hemorrhage. [Abstract]. *J Am Soc Echocardiogr.* 2016 Jun;29(6): B121
68. \*§ Hravnak, M., Yousef, K.M., Chang, Y., **Crago, E.**, Friedlander, R.M. Cerebral Regional Tissue Oxygenation in Patients with Neurocardiac Injury after Subarachnoid Hemorrhage. [Abstract]. *Intensive Care Medicine Experimental.* 2016; 4 [Supple 3]: A403.
69. \*§ Yousef, K.M., **Crago, E.A.**, Chang, Y., Lagattuta, T.F., Hravnak, M. (2016). Vasopressors Use in Subarachnoid Hemorrhage: Does it Improve Cerebral Oxygenation? [Abstract]. *Critical Care Medicine.* 44 (12):97.
70. \*Yousef, K.M., **Crago, E.A.**, Lagattuta, T.F., Hravnak, M. (2016). Admission Predictors of Subarachnoid Hemorrhage-Associated Myocardial Injury. [Abstract]. *Critical Care Medicine.* 44 (12):259.
71. \***Crago, E.**, Miller, T., Poloyac, S., Wagner, A. (2016). The Association between Serum Insulin Growth Factor and Estrogen to Outcomes after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine.* 44(12):263.
72. \*Kagiyama, N., Sugahara, M., **Crago, E.A.**, Lagattuta, T.F., Yousef, K.M., Hravnak, M.T., Gorcsan, J. (2017). Right Ventricular Strain as a New Marker of Neuro-cardiac Injury in Patients with Subarachnoid Hemorrhage [Abstract]. *J Am Soc Echocardiography,* 30(6).
73. \*Kagiyama, N., Sugahara, M., **Crago, E.A.**, Lagattuta, T.F., Yousef, K.M., Hravnak, M.T., Gorcsan, J. (2017). Reduced Global Longitudinal Strain is Associated with In-hospital Mortality in Patients with Subarachnoid Hemorrhage and Preserved Ejection Fraction. [Abstract]. *J Am Soc Echocardiography,* 30(6).
74. \*Yousef, K.M., Kagiyami, N., **Crago, E.**, Lagattuta, T., Mahmoud, K., Friedlander, R.M., Gorcsan, J., Hravnak, M. (2017). Modest Elevation in Troponin Predicts Functional Myocardial Impairment by Echocardiogram After Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Intensive Care Medicine Experimental.*
75. \***Crago, E.**, Nobuyuki, K., Masataka, S., Fisher, A., Chang, Y., Lagattuta, T., Hravnak, M., Gorcsan III, J. (2017). Reduced Global Longitudinal Strain is Associated with Poor Memory Performance at 3 and 12-months after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Neurocritical Care.*27 (suppl 2): 397.
76. \***Crago, E.**, Miller, T., Poloyac, S., Park, S., Wagner, A. (2017). Plasma Insulin Growth Factor Levels are Associated with Clinical Severity and Outcomes after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Neurocritical Care.*27 (suppl 2): 391.
77. \*Kagiyama, N., Sugahara, M., Hasselberg, NE., **Crago, E.A.**, Lagattuta, T.F., Yousef, K.M., Hravnak, M.T., Gorcsan, J. (2017). Biventricular Strain as a New Marker of Severity of Neurocardiac Injury in Patients with Subarachnoid Hemorrhage. [Abstract]. *Circulation,* 136 (Suppl 1): A18370.
78. \*Kagiyama, N., Sugahara, M., Hasselberg, NE., **Crago, E.A.**, Lagattuta, T.F., Yousef, K.M., Hravnak, M.T., Gorcsan, J. (2017). Biventricular Cardiac Dysfunction in Neurocardiac Injury Assessed by Strain Imaging is Associated with In-Hospital Mortality in Subarachnoid Hemorrhage. [Abstract]. *Circulation,* 136 (Suppl 1): A17482.
79. \*Hravnak, M., Yousef, K.M., Kagiyama, N., Sugahara, M., **Crago, E.**, Mahmoud, K., Lagattuta, T., Gorcsan, J. (2018). Persistent Global Longitudinal Strain Abnormality by Echocardiogram Predicted by Cardiac Troponin I. [Abstract]. *Critical Care Medicine,* 46 (1): 19.
80. \***Crago, E.**, Kagiyama, N., Sugahara, M., Fisher, A., Chang, Y., Lagattuta, T., Gorcsan, J., Hravnak, M. (2018). Reduced Global Longitudinal Strain is Associated with Poor Executive Function after aSAH. [Abstract]. *Critical Care Medicine,* 46 (1): 347.
81. \* § **Crago, E.**, Kagiyama, N., Sugahara, M., Mallampalli, G., OHandley, A., Chang, Y., Gorcsan, J., Hravnak, M., Poloyac, S. (2018). Elevated Plasma Estradiol is Associated with Global

Longitudinal Strain after aSAH. [Abstract]. *Critical Care Medicine*, 46(1):15.

82. \*Hravnak, M., **Crago, E.**, Chang, Y., Mahmoud, K., Yousef, K.M., Lagattuta, T., Fisher, A., Pinsky, M.R., Friedlander, R.M. (2018). Elevated Cardiac Troponin I is Associated with Lower Blood Pressure on the First Admission Day after Aneurysmal Subarachnoid Hemorrhage. [Abstract]. *Intensive Care Experimental*. 6 (suppl 2):40.
83. \***Crago, E.**, Kagiya, N., Chang, Y., Mahmoud K, Fisher, A., Lagattuta, T., Gorcsan, J., Hravnak, M. (2018). Abnormal Global Longitudinal Strain is More Associated with aSAH Outcomes than Traditional Echocardiogram Parameters. [Abstract]. *NeuroCritical Care*. 20 (suppl 1):2.
84. \*Yousef, K.M., **Crago, E.**, Fisher, A., Mahmoud, K., Lagattuta, T., Hravnak, M. (2019). Grading scales in Subarachnoid Hemorrhage: Which Scale to Control for When Studying Outcomes? [Abstract]. *Critical Care Medicine*. 47(1):2, January 2019.
85. \*Hravnak, M., **Crago, E.**, Fisher, A., Chang, Y., Yousef, K.M., Mahmoud, K., Lagattuta, T., Pinsky, M.R., Friedlander, R.M. (2019). Lower Blood Pressure After Subarachnoid Hemorrhage Associated to Late Neuropsychological Dysfunction. [Abstract]. *Critical Care Medicine*. 47(1):3, January 2019.
86. \* **§ Crago, E.**, Kagiya, N., Chang, Y., Fisher, A., Lee, C., Lagattuta, T., Gorcsan, J., Hravnak, M. (2019). Global Longitudinal Strain May Be a Determinant of Quality of Life After Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*. 47(1):330, January 2019.
87. \* Yousef, K., **Crago, E.**, Fisher, A., Lagatutta, T., Hravnak, M. (2020). Mean Flow Velocity of the Middle Cerebral Artery Predicts Poor Outcome After Subarachnoid Hemorrhage. [Abstract]. *Critical Care Medicine*. 48(1):19, January 2020.
88. \* **§ Crago, E.**, Ren, D., Greenwald, A., Fisher, A., Miller, T., Poloyac, S., Wagner, A. (2020). The Association Between Plasma Testosterone and Functional Outcomes after Aneurysmal SAH. [Abstract]. *Critical Care Medicine*. 48(1):349, January 2020.
89. \***Crago, E.**, Miller, T., Fisher, A., Ren, D., Poloyac, S., Wagner, A. (2021). Association of Plasma Insulin Growth Factor to Memory and Cognition 12 Months after Aneurysmal SAH. [Abstract]. *Critical Care Medicine*. 49(1):2, January 2021.
90. \***Crago, E.**, Ren, D., Fisher, A., Miller, T., Wagner, A. (2023). Plasma Estrogen Levels are Associated with Functional and Quality of Life Outcomes after aSAH. . [Abstract]. *Neurocrit Care* 39 (Suppl 1), s260. <https://doi.org/10.1007/s12028-023-01814-1>
91. \***§Crago, E.**, Chung, M., Miller, T., Fisher, A., Ren, D., Erickson, K. Hormone Levels Following Acute Aneurysmal Subarachnoid Hemorrhage: A Matched Study Of Older Adults. [Abstract]. *Critical Care Medicine* 52(1):p S275, January 2024. | DOI: 10.1097/01.ccm.0001000592.88206.15

### Invited Articles and Position Papers

1. Sherwood, P., & **Crago, E.** Spiro, R., Okonkwo, D. (Cover article) (2007). Cervical spine injuries: Preserving Function, Improving Outcomes. *American Nurse Today*, 2, 26-29.
2. **Crago, E.** Core Principles of Acute Neurology: Identifying Neuro-emergencies (Book Review). 2016. *Critical Care Medicine*. 45 (1):e122.

### Book Chapters

1. Kerr, M.E. & **Crago, E.** (2004). Acute Intracranial Pressure Monitoring. In S.M. Lewis, M.M. Heitkemper, & S.R. Dirksen (Eds.), *Medical-surgical nursing* (6<sup>th</sup> ed.). St. Louis: Mosby.
2. Sherwood, P., & **Crago, E.** (2007). Autonomic Dysreflexia. In B. Ackley, G. Ladwig, B. Swan, & S. Tucker (Eds), *An Evidence-based Guide to Planning Care* (8<sup>th</sup> ed., pp. 157-160). St. Louis: Mosby, p. 157-160.
3. Sherwood, P., & **Crago, E.** (2007). Autonomic Dysreflexia. In B. Ackley & G. Ladwig (Eds.), *Nursing Diagnosis Handbook* (8<sup>th</sup> ed).

4. Sherwood, P., & **Crago, E.** (2014). Autonomic dysreflexia. In B. Ackley, G. Ladwig, B. Swan, & S. Tucker (Eds), *Nursing Diagnosis Handbook: An Evidence-based Guide to Planning Care* (10<sup>th</sup> ed.). St. Louis: Mosby.

### **Other Publications**

1. Li, Lingjue (2019) Alteration of Cerebral Blood Flow after Neurovascular Injury. Committee member. Doctoral Dissertation, University of Pittsburgh.(Unpublished) <http://d-scholarship.pitt.edu/36590/>

## **Research**

### **Current Research**

*Role: Principal Investigator*

Kuehn Research Award, Pitt SON

Long-term Follow up of Sex Steroids and Hormones and Their Relationship to Outcomes after aSAH: Prospective Cohort.

Funding period: 09/1/2022 – 8/31/2023

*Role: Co-Principal Investigator*

Internal Funded (PI: Crago)

An Evaluation of Sleep Patterns in Hospitalized Patients

Funding period 12/2021- 8/31/2023

### **Completed Research**

*Role: Principal Investigator*

NIH/NINR R01NR018160 (PI: Crago)

Sex Steroids and IGF1 in the CNS Following aSAH and Their Relationship to Patient Outcomes

Funding period: 09/20/2018 – 7/31/2021; NCE 8/1/2021-12/31/2022

*Role: Principal Investigator*

Center for Research Evaluation, Pilot Funding, Pitt SON

Examining the Relationship Between Cognitive Function and Plasma Levels of Estrogens, Androgens and Insulin Growth Factor in Healthy Older Adults

Funding period: 1/1/2021 – 12/31/2021

*Role: Principal Investigator*

Central Research Development Fund, Pitt SON

The Effect of IGF1 Gene Variants on Functional Outcomes after aSAH

Funding period: 7/1/2017-6/30/2018

*Role: Principal Investigator*

Leslie A. Hoffman Endowed Research Award, Pitt SON

Assessing the Relationship of Cerebral Vascular Reactivity to Outcomes after Aneurysmal Subarachnoid Hemorrhage

Funding period: 1/1/2017 – 12/31/2017

*Role: Co-Investigator*

PI: Marilyn Hravnak, RN, PhD Institution: University of Pittsburgh School of Nursing

Robert Friedlander, MD Institution: University of Pittsburgh School of Medicine

NIH/NINR R01 NR 014221

Developing goal directed perfusion therapy in SAH neurocardiac injury

Funding period: 2014-2018

*Role: Co-Investigator*

PI: Yvette Conley, PhD, Institution: University of Pittsburgh School of Nursing  
NIH/NINR R01 NR013610

Epigenomics of Patient Outcomes after Aneurysmal SAH

Funding period:

*Role: Principal Investigator*

Competitive Medical Research Fund U of Pitt

The Relationship of Hormone Levels to Outcomes After Acute Aneurysmal Subarachnoid Hemorrhage

Funding period: 7/15/2014- 7/15/2015

*Role: Principal Investigator*

Neuroscience Nursing Foundation

The Role of Estrogen in the Development of Delayed Cerebral Ischemia after Aneurysmal Subarachnoid Hemorrhage

Funding period: 2011-2012

*Role: Principal Investigator*

Nightingale Scholarship of Pennsylvania

The Role of Estrogen in the Development of Delayed Cerebral Ischemia after Aneurysmal Subarachnoid Hemorrhage

Funding period: 2011-2012

*Role: Co-Investigator*

PI: Tudor Jovin, MD: University of Pittsburgh Medical Center  
Internal

XeCt Safety Study

Funding period: 2005-2010

**Other Scholarly Activities**

**Training Grant**

Core Faculty/Training Grant  
University of Pittsburgh School of Nursing  
T32NR009759

Targeted Research and Academic Training for Nurses in Genomics

National Institute of Nursing Research

**Grant Reviewer**

2010-present Small Grant Reviewer American Association Neuroscience Nursing Foundation

2011-present Grant Reviewer Neuroscience Nursing Foundation (NNF) Grants

2016 Grant Reviewer Leslie Hoffman Scholarship Award University of Pittsburgh School of Nursing

2019 STT Eta chapter Research and Quality Improvement Award Reviewer

**Abstract Reviewer**

2010 – present American Heart Association International Stroke Conference

2016 Society of Critical Care Medicine

2017 International Society of Nursing Genetics

### Editorial Reviewer

2006 AACN AANN protocols for practice focusing on the critical neuro population –**Monitoring Technologies in the Critically Ill Neuroscience Patient**

2016 Critical Care Medicine **Core Principles of Acute Neurology: Identifying Neuro Emergencies.**

### Journal Reviewer

2013 Journal of NeuroCritical Care

2014 British Journal of Neuroscience Nursing

2017 PLOS One

2017 Neuroscience Nursing

### Clinical Practice Guidelines

2022-current AANN Clinical Practice Guidelines – “Care of the patient with aneurysmal subarachnoid hemorrhage”

### Consultation

2016, July Kazakhstan Professional Development Program Module 7: Care of the Hospitalized Patient -Assigned to unit 8 - Care of the patient with altered mental status and Unit 12 - care of the patient with trauma. The modules were formatted to consist of 30 hours of lecture with power points and 30 hours of learning activities to accompany the lectures.

### Scholarships and Traineeships

2011 Ruth Perkins Kuehn Award Sigma Theta Tau Eta Chapter  
University of Pittsburgh School of Nursing

2011 Nightingale of Pennsylvania Scholarship – Doctoral Student

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## Presentations

### International

1. \*Nemoto, E., Kerr, M.E. Yonas, H., Kassam, A., Alexander, S., **Crago, E.** (2000, August). *Continuous Assessment of Cerebrovascular Regulation after Subarachnoid Hemorrhage (SAH) by Near-infrared Spectroscopy (NIRS).* Podium. International Society on Oxygen Transport to Tissue, Nijmegen, Netherlands.
2. \*Kerr M, Nemoto, E., Yonas H, Kassam, A., **Crago E.** (2000, August). *Vasospasm Detection following SAH Using Cerebral Oximetry.* Podium. International Society on Oxygen Transport to Tissue, Nijmegen, Netherlands.
3. \***Crago, E.**, Kerr, M., Kassam, A., Yonas, H. (2001, January). *Clinical Presentation of Fever, Vasospasm and Clinical Neurologic Deterioration Following Subarachnoid Hemorrhage.* Poster. Society of Critical Care Medicine 30<sup>th</sup> International Educational and Scientific Symposium, San Francisco, Ca.
4. \*§ Lorenzi, L., Kerr, M.E., Yonas, H., Kassam, A., Alexander, S., **Crago, E.** (2001, January). *Delaying Treatment after Symptoms Develop from Subarachnoid Hemorrhage (SAH) on Outcome: A Preliminary Analysis.* Poster. Society of Critical Care Medicine 30<sup>th</sup> International Educational and Scientific Symposium, San Francisco, Ca.
5. \*Ward, S., Valenta, C., **Crago, E.**, Michalic, D., Mitchell-Perry, R., Reilly, E., Kerr, M.E., Yonas, H. (2001, January). *Implementation and Evaluation of a Neurologic Data Set for the SAH Patient.*



Poster. Society of Critical Care Medicine 30<sup>th</sup> International Educational and Scientific Symposium, San Francisco, Ca.

6. \*§ **Crago, E.**, Kerr, M., Fails, M., Yonas, H. (2002, January). *Effect of Preexisting Cardiac Disease on Cardiac Complications, Angiographic Vasospasm and Neurological Deterioration following Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 31<sup>st</sup> International Educational & Scientific Symposium, San Diego, CA.
7. \*Kerr, M.E., **Crago, E.**, Alexander, S., Kim, Y. Kamboh, I, Marion, D. (2003, January). *Conditions Associated with Neurologic Deterioration in the SAH Patient*. Podium. Society of Critical Medicine 32<sup>nd</sup> International Educational & Scientific Symposium, San Antonio, TX.
8. \***Crago, E.**, Kerr, M.E., Baldesseri, M., Horowitz, M., Kassam, A., Yonas, H. (2003, January). *Impact of Cardiac Complications on Outcomes in Patients with Subarachnoid Hemorrhage*. Podium. Society of Critical Medicine 32<sup>nd</sup> International Educational & Scientific Symposium, San Antonio, TX.
9. \***Crago, E.**, Kong, Y., Kerr, M., Yonas, H., Horowitz, M., Kassam, A. (2004, February). *Relationship between Aneurysm Site and 2-year Outcomes in Patients following Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 33<sup>rd</sup> International Educational & Scientific Symposium, Orlando, FL.
10. \*Beatty, M., Kerr, M., Condon, I., Kong, Y., Alexander, S., **Crago, E.**, Horowitz, M., Yonas, H. (2004, January). *Comparison of Coiling Verses Clipping on 6-month Outcomes Following Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 33<sup>rd</sup> International Educational & Scientific Symposium, Orlando, FL.
11. \*Kong, Y., Kerr, M., **Crago, E.**, Yonas, H., (2004, February). *A Multifactorial Model and Lindegaard Ratio for Vasospasm Prediction following Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 33<sup>rd</sup> International Educational & Scientific Symposium, Orlando, FL.
12. \***Crago, E.**, Kerr, M., Levy, E., Horowitz, M., Yonas, H., Kassam A., Stippler, M. (2005, January). *Effect of Continuous Magnesium Infusion on Cerebral Vasospasm and 3-month Outcomes following Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 34<sup>th</sup> International Educational & Scientific Symposium, Phoenix, AZ.
13. Poloyac, S., **Crago, E.**, Sherwood, P., Bies, R., Hoffman, L.A., Kerr, M.E. (2005, January). *Temporal Profile of 20-HETE, a CYP Metabolite of Arachidonic Acid, in the CSF of Subarachnoid Hemorrhage Patients*. Poster. International Society for the Study of Xenobiotics, Maui, HI
14. \*Hravnak, M., **Crago, E.**, Kong, Y., Hricik, A., Horowitz, M. (2006, January). *Relationship between Race, Vasospasm and Outcomes in African-American and Caucasian Patients with Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 35<sup>th</sup> International Educational & Scientific Symposium, San Francisco, CA.
15. \***Crago, E.**, Hravnak, M., Kong, Y., Sherwood, P., Horowitz, M. (2006, January). *Relationship of Catecholamines on Markers of Myocardial Ischemia in Patients with Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 35<sup>th</sup> International Educational & Scientific Symposium, San Francisco, CA.
16. \*Hravnak, M., **Crago, E.**, Horowitz, M. (2007, February). *Prolonged QT Interval after Aneurysmal Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 36<sup>th</sup> International Educational & Scientific Symposium, Orlando, FL.
17. \*§ **Crago, E.**, Gupta, R., Gallek, M., Chang, Y., Horowitz, M., Yonas, H. (2007, February). *Early Lower Global Hemispheric CBF on Initial Xenon CT in Patients with Aneurysmal Subarachnoid Hemorrhage is Predictive of Poor 3-month Outcomes*. Poster. Society of Critical Care Medicine 36<sup>th</sup> International Educational & Scientific Symposium, Orlando, FL.
18. \*§ **Crago, E.**, Gupta, R., Gallek, M., Chang, Y., Horowitz, M., Yonas, H. (2007, February). *Early Lower Ipsilateral Hemispheric Cerebral Blood Flow on Initial Xenon CT is Predictive of the Development of Cerebral Vasospasm after Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 36<sup>th</sup> International Educational & Scientific Symposium, Orlando, FL.

19. \*§ Gallek, M., Sherwood, P., **Crago, E.**, Alexander, S., Hoffman, L., Horowitz, M., Poloyac, S. (2007, February). *Endothelin-1 Cerebrospinal Fluid Levels are Associated with the Development of Cerebral Vasospasm in Aneurysmal Subarachnoid Hemorrhage Patients*. Poster. Society of Critical Care Medicine 36<sup>th</sup> International Educational & Scientific Symposium, Orlando, FL.
20. \*§ Hravnak, M., **Crago, E.**, Miketic, J., Chang, Y., & Horowitz, M. (2008, February). *Admission Serum Glucose and Outcomes in Patients with Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 37<sup>th</sup> International Educational & Scientific Symposium, Honolulu, HI.
21. \*Sherwood, P., **Crago, E.**, Gallek, M., Hricik, A., Ren, D., Hoffman, L., Poloyac, S. (2008, February). *Endothelin and Neuropsychological Outcomes in Aneurysmal Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 37<sup>th</sup> International Educational & Scientific Symposium, Honolulu, HI.
22. \*Hricik, A.J., **Crago, E.A.**, Bender, C.M., Lu, X., Kassam, A.B., Horowitz, M.B., Hoffman, L.A. (2008, February). *Coiling Versus Clipping following Subarachnoid Hemorrhage: 3 & 12-month Evaluation of Neuropsychological Outcomes*. Poster. Society of Critical Care Medicine 37<sup>th</sup> International Educational & Scientific Symposium, Honolulu, HI.
23. \***Crago, E.**, Sherwood, P., Tanabe, M., Hricik, A., Chang, Y., Hravnak, M., Horowitz, M., Kassam, A., Gorcsan, J., Bender, C. (2008, February). *The Relationship between Myocardial Dysfunction and 12-month Neuropsychological Outcomes in Patients following Aneurysmal Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 37<sup>th</sup> International Educational & Scientific Symposium, Honolulu, HI.
24. **Crago, E.** (2008, February). *Nursing Year in Review; Rapid Response Teams*. The SCCM 37<sup>th</sup> International scientific and educational meeting; Honolulu, HI.
25. \*Hricik, A.J., Sherwood, P., **Crago, E.**, Hoffman, L., Horowitz, M.B., Bender, C. (2008, February). *Prevalence of Cognitive Dysfunction 1-year following Subarachnoid Hemorrhage*. Poster. International Neuropsychological Society 36<sup>th</sup> Annual Meeting, Waikoloa, HI.
26. \*§ Hravnak, M., Frangiskakis, M., **Crago, E.**, Gallek, M.J., Chang, Y., Horowitz, M. (2008). *Elevated Cardiac Troponin I and Electrocardiographic and Echocardiographic Abnormalities after Aneurysmal Subarachnoid Hemorrhage*. Podium. 21<sup>st</sup> ESICM Congress, Lisbon, Portugal.
27. \***Crago, E.**, Sherwood, P., Kuo, J., Hricik, A., Horowitz, M., Kassam, A., Poloyac, S. (2009, January). *Cerebrospinal Fluid 20-HETE is Associated with Poor Neuropsychological Outcomes after Aneurysmal Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 38<sup>th</sup> International Educational & Scientific Symposium, Nashville, TN.
28. \*Hravnak, M., **Crago, E.**, Frangiskakis, M., Chang, Y., Gorcsan, J., Horowitz, M. (2009, January). *Relationship between Left Ventricular Motion Abnormalities and Markers of Neurocardiac Injury in Patients with Aneurysmal Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 38<sup>th</sup> International Educational & Scientific Symposium, Nashville, TN.
29. **Crago, E.** (2010, January). *Nursing Year in Review*. The 39<sup>th</sup> SCCM International scientific and educational meeting; Miami, FL.
30. \*§ **Crago, E.**, Adkins, K., Kuo, C., Horowitz, M., Sherwood, P. (2010, January). *Initial Symptom Presentation as a Predictor of Mortality and Length of Stay in the Patient with Aneurysmal Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 39<sup>th</sup> International Educational & Scientific Meeting; Miami, FL.
31. \*§ Yousef, K., **Crago, E.**, Kuo, C., Hravnak, M. (2010, January). *Predictors of Ventricular Ectopy after Aneurysmal Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 39<sup>th</sup> International Scientific and Educational Meeting; Miami, FL.
32. \*Hravnak, M., Poloyac, S., Yao, J., **Crago, E.**, Chang, Y., Gorcsan, Y., Horowitz, M. (2010, January). *Relationship between Catecholamines and Neurocardiac Injury in Patients with Aneurysmal Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 39<sup>th</sup> International Scientific and Educational Meeting; Miami, FL.

33. \*Alexander, S., Poloyac, S., Ren, D., **Crago, E.**, Conley, Y. (2010, January). *DDAH2 Genotype Predicts Outcome after Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 39<sup>th</sup> International Scientific and Educational Meeting; Miami, FL.
34. \*Watkins, L., Alexander, S., Ren, D., **Crago, E.**, Conley, Y., Kagan, V., Bayir, H. (2010, January). *Haptoglobin Containing A2 Subunit Favor Angiographic Vasospasm in Aneurysmal Subarachnoid Hemorrhage (SAH)*. Poster. Society of Critical Care Medicine 39<sup>th</sup> International Scientific and Educational Meeting; Miami, FL.
35. \*Kantor, E., Conley, Y., Ren, D., Bayir, H., Provencio, J., **Crago, E.**, Horowitz, M., Alexander, S. (2010, January). *Haptoglobin Genotype and Functional Outcome after Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 39<sup>th</sup> International Scientific and Educational Meeting; Miami, FL.
36. \*§ Chuang, P., Donovan, H., Sherwood, P., Hricik, A., **Crago, E.**, Kuo, C.J., Bender, C. (2010, April). *Factors Associated with Poor Neuropsychological Outcomes following Aneurysmal Subarachnoid Hemorrhage*. Poster. Annual Society of Behavioral Medicine Conference, Seattle, WA.
37. \***Crago, E.**, Kuo, C., Sherwood, P., Horowitz, M., Poloyac, S. (2011, January). *Cerebrospinal Fluid 20-hydroxyicosatetraenoic Acid is Associated with Delayed Cerebral Ischemia and Poor Outcomes after Aneurysmal Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 40<sup>th</sup> International Scientific and Educational Meeting; San Diego CA.
38. \*§ Yousef, K., **Crago, E.**, Kuo, C., Horowitz, M., Hravnak, M. (2011, January). *Elevated Intracranial Pressure Predicts Poor Function and Death after Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 40<sup>th</sup> International Scientific and Educational Meeting; San Diego, CA.
39. \*Hravnak, M., Thampatty, B., Poloyac, S., Yao, J., **Crago, E.**, Horowitz, M. (2011, January). *Persistence of Monoamines in Aneurysmal Subarachnoid Hemorrhage Patients with Myocardial Injury*. Poster. Society of Critical Care Medicine 40<sup>th</sup> International Scientific and Educational Meeting; San Diego, CA.
40. \*Watkins, L., Alexander, S., Alexander, K., Ren, D., **Crago, E.**, Conley, Y., Kaga, V., Bayir, H. (2011, January). *Possible Role for Haptoglobin and Hemoglobin Aggregates in Patho-mechanism of Aneurysmal Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 40<sup>th</sup> International Scientific and Educational Meeting; San Diego, CA.
41. Kim, H., **Crago, E.**, Kim, M., Conley, Y., Sherwood, P., Poloyac, S., Kerr, M. (2011, February). *Genome-wide SNP Association for Cerebral Vasospasm in Subarachnoid Hemorrhage Patients*. Podium. International Stroke Conference, Los Angeles, CA.
42. \*Yousef, K., **Crago, E.**, Hamilton, J., Duursma, M., Colorito, P., Balzer, J., Sherwood, P. (2011, September). *Relationship between Mean Arterial Pressure and Cerebral Blood Flow Velocities in Patients with Subarachnoid Hemorrhage*. Poster. Neurocritical Care Society 9th Annual Meeting, Montréal, QC, Canada.
43. \***Crago, E.**, Donnelly, M., Sherwood, P., Kuo, C., Balzer, J., Horowitz, M., Poloyac, S. (2011, September). *The Association of Metabolites of Arachidonic Acid in CSF on the Incidence of Delayed Cerebral Ischemia after Aneurysmal Subarachnoid Hemorrhage*. Poster. Neurocritical Care Society 9th Annual Meeting, Montréal, QC, Canada.
44. \*Hravnak, M., Thampatty, B., Poloyac, S., Yao, J., **Crago, E.**, Horowitz, M. (2012, October). *Persistently Elevated Monoamines are Associated with Severity of Aneurysmal Subarachnoid Hemorrhage*. Podium. European Society of Intensive Care Medicine 24<sup>th</sup> Annual Conference, Berlin, Germany.
45. \*Hravnak, M., Thampatty, B., Poloyac, S., Yao, J., **Crago, E.**, Horowitz, M. (2012, February). *Monoamine Relationship to Blood Load following Aneurysmal Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 41<sup>st</sup> International Scientific and Educational Meeting; Houston, Texas. (SCCM Neurology Award 2012).

46. \*§ Yousef, K., Kuo, C., **Crago, E.**, Balzer, J., Poloyac, S., Sherwood, P. (2012, February). *The Impact of Sodium Level on Neurologic Deterioration after Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 41<sup>st</sup> International Scientific and Educational Meeting; Houston, TX.
47. \***Crago, E.**, Donnelly, M., Ren, D., Sherwood, P., Horowitz, M., Poloyac, S. (2012, February). *Cerebrospinal Fluid 11-12 and 14-15 DHET after Aneurysmal Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 41<sup>st</sup> International Scientific and Educational Meeting, Houston, TX.
48. \*Thampatty, B., Poloyac, S., Yao, J., **Crago, E.**, Horowitz, M., Hravnak, M. (2012, February). *Endogenous Monoamine Metabolites and Relationship to Gender after Aneurysmal Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 41<sup>st</sup> International Scientific and Educational Meeting; Houston, TX.
49. \*§ Chuang, P.Y., Hricik, A., Kuo, C.W., **Crago, E.**, Bender, C., Sherwood, P. (2012, February). *Factors Associated with Poor Neuropsychological Outcomes following Aneurysmal Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 41<sup>st</sup> International Scientific and Educational Meeting, Houston, TX.
50. \*§ Yousef, K., Choi, C.J., **Crago, E.**, Poloyac, S., Balzer, J., Sherwood, P. (2012, October). *Aneurysmal Subarachnoid Hemorrhage: Comparing the Performance of Grading Scales in Predicting Complications and Outcomes*. Poster. Neurocritical Care Society 10<sup>th</sup> Annual Meeting, Denver, CO. (Distinguished Poster Award)
51. \***Crago, E.**, Sherwood, P., Bender, C., Balzer, G., Ren, D., Poloyac, S. (2012, October). *The Association of Cerebrospinal Fluid Estrogen Levels to Injury and Outcomes after Aneurysmal Subarachnoid Hemorrhage*. Poster. Neurocritical Care Society, 10<sup>th</sup> Annual Meeting, Denver, CO.
52. \*Hravnak, M., Chang, Y., **Crago, E.**, Price, T., Horowitz, M. (2013, January). *Impact of Myocardial Injury after Subarachnoid Hemorrhage (SAHMI) Upon Perfusion*. Podium. Society of Critical Care Medicine 42<sup>nd</sup> Critical Care Congress, San Juan, Puerto Rico. (SCCM Neurology Award).
53. \***Crago, E.**, Sherwood, P., Bender, C., Balzer, J., Ren, D., Poloyac, S. (2013, January). *The Relationship between Plasma Estrogen Levels and Severity of Injury and Delayed Cerebral Ischemia after Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 42<sup>nd</sup> Critical Care Congress, San Juan, Puerto Rico.
54. \*§ Yousef, K., Balzer, J., **Crago, E.**, Poloyac, S., Sherwood, P. (2013, January). *Transcranial Regional Cerebral Oxygen Desaturation Predicts Delayed Cerebral Ischemia and Poor Outcomes After Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 42<sup>nd</sup> Critical Care Congress, San Juan, Puerto Rico.
55. \***Crago, E.**, Sherwood, P., Bender, C., Balzer, J., Ren, D., Poloyac, S. (2013, October). *Plasma Estrogen Levels are Associated with Adverse Outcomes following Acute Aneurysmal Subarachnoid Hemorrhage*. Poster. NeuroCritical Care Society 11<sup>th</sup> Annual Meeting, Philadelphia, Pa. (Distinguished Poster Award)
56. \*Hravnak, M., Chang, Y.; Price, T.J.; **Crago, E.**, Jankowitz, B., Friedlander, R.M. (2013, October). *Cerebral Perfusion Pressure is Lower in Patients with Myocardial Injury after Subarachnoid Hemorrhage*. Podium. European Society of Critical Care Medicine, Paris, France.
57. \*§ Donnelly, M., Conley, Y., **Crago, E.**, Sherwood, P., Balzer, J., Poloyac, S. (2014, January). *Association of SNPS on Genes Affecting EET Levels and Delayed Cerebral Ischemia in aSAH Patients*. Poster. Society of Critical Care Medicine 43<sup>rd</sup> Critical Care Congress, San Francisco, CA.
58. \*Hravnak, M., Chang, Y., **Crago, E.** (2015, January). *Impact of Age on Perfusion Abnormalities in Patients with Myocardial Injury after Subarachnoid Hemorrhage*. Podium. Society of Critical Care Medicine 44<sup>th</sup> Critical Care Congress, Phoenix, AZ. (SCCM Abstract Award).

59. \*§ **Crago, E.**, Price, T., Horowitz, M. (2015, January). *The Effect of Aneurysmal Subarachnoid Hemorrhage on Work Productivity*. Podium. Society of Critical Care Medicine 44<sup>th</sup> Critical Care Congress, Phoenix, AZ. (SCCM Neurology Award).
60. \*§ Yousef, K., **Crago, E.**, Price, T., Lagatutta, T., Sherwood, P. (2015, January). *Vasopressors Do Not Improve Outcomes of Delayed Cerebral Ischemia After Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 44<sup>th</sup> Critical Care Congress, Phoenix, AZ.
61. \*§ Stanfill, A., **Crago, E.**, Deslouches, S., Conley, Y. (2015, October). *Characterization of methylation status for dopaminergic and serotonergic genes in cerebrospinal fluid of subarachnoid hemorrhage patients*. Podium. International Society of Nurses in Genetics conference, Pittsburgh, PA.
62. \***Crago, E.**, Chang, Y., Yousef, K., Lagatutta, T., Poloyac, S., Hravnak, M. (2015, October). *Elevated Plasma Estrogen Levels Are Associated with Neurocardiac Injury after Aneurysmal Subarachnoid Hemorrhage*. Podium. Neurocritical Care Society 13<sup>th</sup> Annual Meeting, Scottsdale, AZ.
63. \*§ Yousef, K.M., Lagattuta, T.F., Chang, Y., **Crago, E.**, Pinsky, M.R., Hravnak, M. (2015, October). *The Impact of Norepinephrine Administration on Cerebral and Peripheral Tissue Oxygen Saturation after Subarachnoid Hemorrhage*. Poster. Neurocritical Care Society 13<sup>th</sup> Annual Meeting, Scottsdale, AZ.
64. \*§ **Crago, E.**, Yousef, K., Chang, Y., Lagatutta, T., Hravnak M. (2016, January). *Relationship between cerebral tissue oxygenation and cardiac output after subarachnoid hemorrhage*. Poster. Society of Critical Care Medicine 45<sup>th</sup> Critical Care Congress, Orlando, FL.
65. \***Crago, E.**, Yabes, J., Balzer, J., Triulzi, L., Ducruet, A., Sherwood, P., Poloyac, S. (2016, January). *Aneurysmal Subarachnoid Hemorrhage Patients with Elevated 20-HETE have Higher Lindegaard Ratios*. Poster. Society of Critical Care Medicine 45<sup>th</sup> Critical Care Congress, Orlando, FL. (Snapshot Abstract Award).
66. \*Hravnak, M., Yousef, K., Chang, Y., **Crago, E.**, Lagatutta, T., Pinsky, M.R. (2016, January). *Noninvasive Cardiac Output Monitoring to Evaluate Neurocardiac Injury after Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 45<sup>th</sup> Critical Care Congress, Orlando, FL.
67. \***Crago, E.**, Wagner, A., Sherwood, P., Poloyac, S., Conley, Y. (2016, August). *The Impact of Aromatase Genotypes on Long Term Outcomes after Aneurysmal Subarachnoid Hemorrhage*. Podium. International Society of Nurses in Genetics World Conference, Dublin, Ireland.
68. \*§ Stanfill, A., Sherwood, P., Poloyac, S., **Crago, E.**, & Conley, Y. (2016, August). *The Impact of Dopamine, Serotonin, and BDNF Genotype on Long-term Outcomes after Aneurysmal Subarachnoid Hemorrhage*. Podium. International Society of Nurses in Genetics world conference, Dublin, Ireland.
69. \*Hravnak, M., Yousef, K.M., Chang, Y., **Crago, E.**, Friedlander, R.M. (2016, October). *Cerebral Regional Tissue Oxygenation in Patients with Neurocardiac Injury after Subarachnoid Hemorrhage*. Poster. European Society of Intensive Care Medicine, Milan, Italy.
70. \*Yousef, K.M., **Crago, E.A.**, Chang, Y., Lagattuta, T.F., Hravnak, M. (2017, January). *Vasopressors Use in Subarachnoid Hemorrhage: Does it Improve Cerebral Oxygenation?* Podium. Society of Critical Care Medicine 46<sup>th</sup> Critical Care Congress, Honolulu, HI.
71. \*Yousef, K.M., **Crago, E.A.**, Lagattuta, T.F., Hravnak, M. (2017, January). *Admission Predictors of Subarachnoid Hemorrhage-Associated Myocardial Injury*. Poster. Society of Critical Care Medicine 46<sup>th</sup> Critical Care Congress, Honolulu, HI.
72. \***Crago, E.**, Miller, T., Poloyac, S., Wagner, A. (2017, January). *The Association between Serum Insulin Growth Factor and Estrogen to Outcomes after Aneurysmal Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 46<sup>th</sup> Critical Care Congress, Honolulu, HI.
73. \* § Yousef, K.M., Kagiyaami, N., **Crago, E.**, Lagattuta, T., Mahmoud, K., Friedlander, R.M., Gorcsan, J., Hravnak, M. (2017, October). *Modest Elevation in Troponin Predicts Functional Myocardial Impairment by Echocardiogram after Aneurysmal Subarachnoid Hemorrhage*. Podium.

European Society of Intensive Care Medicine, Vienna, Austria.

74. \* § Heinsberg, L., Ren, D., **Crago, E.**, Sherwood, P., Poloyac, S., Conley, Y. (2017, November). *HAMP Gene Polymorphism and Patient Outcomes following Aneurysmal Subarachnoid Hemorrhage*. Poster. International Society of Nurses in Genetics World Conference, Reston, VA.
75. \***Crago, E.**, Kagiya, N., Sugahara, M., Fisher, A., Chang, Y., Lagattuta, T., Hravnak, M., Gorcsan, J III. (2017, October). *Reduced Global Longitudinal Strain is Associated with Poor Memory Performance at 3 and 12 after Aneurysmal Subarachnoid Hemorrhage*. Poster. Neurocritical Care Society 15<sup>th</sup> Annual Meeting Waikoloa, HI.
76. \***Crago, E.**, Miller, T., Poloyac, S., Park, S., Wagner, A. (2017, October). *Plasma Insulin Growth Factor Levels Are Associated with Clinical Severity and Outcomes after Aneurysmal SAH*. Poster. Neurocritical Care Society 15<sup>th</sup> Annual Meeting Waikoloa, HI.
77. \* § Hravnak, M., Yousef, K.M., Kagiya, N., Sugahara, M., **Crago, E.**, Mahmoud, K., Lagattuta, T., Gorcsan, J. (2018, February). *Persistent Global Longitudinal Strain Abnormality by Echocardiogram Predicted by Cardiac Troponin I*. Podium. Society of Critical Care Medicine 47<sup>th</sup> Critical Care Congress, San Antonio, TX. (STAR Abstract Award).
78. \***Crago, E.** Kagiya, N., Sugahara, M., Fisher, A., Chang, Y., Lagattuta, T., Gorcsan, J., Hravnak, M. (2018, February). *Reduced Global Longitudinal Strain is Associated with Poor Executive Function after aSAH*. Poster. Society of Critical Care Medicine 47<sup>th</sup> Critical Care Congress, San Antonio, TX.
79. \* § **Crago, E.**, Kagiya, N., Sugahara, M., Mallampalli, G., O'Handley, A., Chang, Y., Gorcsan, J., Hravnak, M., Poloyac, S. (2018, February). *Elevated Plasma Estradiol is Associated with Global Longitudinal Strain after aSAH*. Podium. Society of Critical Care Medicine 47<sup>th</sup> Critical Care Congress, San Antonio, TX. (STAR Abstract Award).
80. \* § Heinsberg, L., Arockiarah, A., **Crago, E.**, Ren, D., Shaffer, J., Weeks, D., Conley, Y. (2018, October). *Trajectory Patterns of HAMP DNA Methylation and Patient Outcomes Following Aneurysmal Subarachnoid Hemorrhage*. Podium. International Society of Nurses in Genetics World Conference, Orlando, Fla.
81. \* § Hravnak M, **Crago E**, Chang Y, Mahmoud K, Yousef KM, Lagattuta T, Fisher A, Pinsky MR, Friedlander RM. (2018, October). *Elevated Cardiac Troponin I is Associated with Lower Blood Pressure on the First Admission Day after Aneurysmal Subarachnoid Hemorrhage*. Poster. European Society of Intensive Care Medicine, Paris, France.
82. \* § **Crago, E.**, Kagiya, N., Chang, Y., Mahmoud K, Fisher, A., Lagattuta, T., Gorcsan, J., Hravnak, M. (2018, September). *Abnormal Global Longitudinal Strain is More Associated with aSAH Outcomes than Traditional Echocardiogram Parameters*. Poster. Neurocritical Care Society 16<sup>th</sup> Annual Meeting Boca Raton, Fla.
83. \* § Yousef KM, **Crago E**, Fisher A, Mahmoud K, Lagattuta T, Hravnak M. (2019, February). *Grading scales in Subarachnoid Hemorrhage: Which Scale to Control for When Studying Outcomes?* Podium. Society of Critical Care Medicine 48<sup>th</sup> Critical Care Congress, San Diego, Ca. (STAR Abstract Award)
84. \* § Hravnak M, **Crago E**, Fisher A, Chang Y, Yousef KM, Mahmoud K, Lagattuta T, Pinsky MR, Friedlander RM. (2019, February). *Lower Blood Pressure After Subarachnoid Hemorrhage Associated to Late Neuropsychological Dysfunction*. Podium. Society of Critical Care Medicine 48<sup>th</sup> Critical Care Congress, San Diego, Ca. (STAR Abstract Award)
85. \* § **Crago E**, Kagiya N, Chang Y, Fisher A, Lee C, Lagattuta T, Gorcsan J, Hravnak M. (2019, February). *Global Longitudinal Strain May Be a Determinant of Quality of Life After Subarachnoid Hemorrhage*. Poster. Society of Critical Care Medicine 48<sup>th</sup> Critical Care Congress, San Diego, Ca.
86. \* § Heinsberg, L.W., **Crago, E.A.**, Weeks, D.E., Conley, Y.P. (2019, November). *Associations between DNA Methylation of Aconitase 1 and 2 and Patient Outcomes after Aneurysmal Subarachnoid Hemorrhage*. Podium. International Society of Nurses in Genetics World Congress,



San Antonio, TX.

87. \***Crago, E.**, Chuang, Y., Conley, Y.P. (2019, November). *Association study of IGFBP1 and IGFBP3 Polymorphisms with Delayed Cerebral Ischemia after Aneurysmal Subarachnoid Hemorrhage* [Abstract]. International Society of Nurses in Genetics World Congress San Antonio TX (Podium Presentation).
88. \* Yousef K, **Crago E**, Fisher A, Lagatutta T, Hravnak M. (2020, February). *Mean Flow Velocity of the Middle Cerebral Artery Predicts Poor Outcome After Subarachnoid Hemorrhage*. Podium Presentation at the 49<sup>th</sup> Critical Care Congress, Orlando, Fla. (STAR Abstract Award).
89. \* **§ Crago E**, Ren D, Greenwald A, Fisher A, Miller T, Poloyac S, Wagner A. (2020, February). *The Association Between Plasma Testosterone and Functional Outcomes after Aneurysmal SAH*. [Abstract]. Poster presentation at the 49<sup>th</sup> Critical Care Congress, Orlando, Fla.
90. \* **§ Gawron L**, Heinsberg L, **Crago E**, Conley Y. (2020, November). *Oxytocin Gene (OXT) Single Nucleotide Polymorphism and Delayed Cerebral Ischemia after Subarachnoid Hemorrhage*. Poster presentation at the 2020 ISONG World Congress, Virtual.
91. \***Crago E**, Miller T, Fisher A, Ren D, Poloyac S, Wagner A. (2021, January). *Association of Plasma Insulin Growth Factor to Memory and Cognition 12 Months after Aneurysmal SAH*. [Abstract]. Podium presentation at the 50th Critical Care Congress, Virtual. (STAR Research Abstract Award Neurology).
92. \* **Crago E**, Miller T, Ren D, Fisher A, Conley Y. (2021, November). *Association of IGF and IGFBP Polymorphisms with Circulating IGF and IGFBP Levels and Ischemic Outcomes after Aneurysmal Subarachnoid Hemorrhage*. [Abstract]. Podium presentation at the 2021 ISONG World Congress, Virtual.
93. \***Crago E**, Heinsberg L, Meyer L, Fisher A, Wagner A, Conley Y.(2022, November). *The impact of aromatase genotypes on functional outcomes after aneurysmal subarachnoid hemorrhage*. [Abstract]. Poster presentation at the 2022 ISONG World Congress, Durham, North Carolina.
94. \***Crago, E.**, Ren, D., Fisher, A., Miller, T., Wagner, A. (2023, August). *Plasma Estrogen Levels are Associated with Functional and Quality of Life Outcomes after aSAH*. . [Abstract]. Poster presented at the 21<sup>st</sup> Meeting of the NeuroCritical Care Society, Phoenix, Az.
95. \***§Crago, E.**, Chung, M., Miller, T., Fisher, A., Ren, D., Erickson, K. (2024, January). *Hormone Levels Following Acute Aneurysmal Subarachnoid Hemorrhage: A Matched Study of Older Adults*. [Abstract]. Poster presentation at the 53<sup>rd</sup> Critical Care Congress, Phoenix, Az.

### National

1. \***Crago, E.**, Kerr, M., Fails, M., Yonas, H. (2002, October). *Effect of Preexisting Cardiac disease on cardiac complications, angiographic vasospasm and neurological deterioration following subarachnoid hemorrhage*. Podium. State of the Science, Washington, D.C.
2. \***Crago, E.**, Kong, Y., Kerr, M., Yonas, H., Horowitz, M., Kassam, A. (2004, March). *Relationship between aneurysm site and 2 year outcomes in patients following subarachnoid hemorrhage*. Poster. National Congress for the State of the Science in Nursing, Washington, D.C.
3. \*Tanabe, M., Horowitz, M.B., Cannesson, M., Hravnak, M., **Crago, E.A.**, Gorcsan, J. (2006, March). *The relationship between regional left ventricular wall motion and Troponin\_I levels in patients with subarachnoid hemorrhage: Results of the SAHMII study*. Podium. Presented at the American Association of Cardiologists 55<sup>th</sup> Annual Meeting, Atlanta, GA.
4. \*Bender, C., Sherwood, P., Hricik, A., **Crago, E.**, Hoffman, L. (2006, April). *Neuropsychological sequelae following aneurysmal subarachnoid hemorrhage*. Podium. American Association of Neuroscience Nurses 38<sup>th</sup> Annual Meeting, San Diego, CA.
5. \* Hravnak, M., **Crago, E.**, Kong, Y., & Horowitz, M.B. (2006, April). *Prevalence of electrocardiographic abnormalities in patients with subarachnoid hemorrhage*. Podium. American Association of Critical Care Nurses National Teaching Institute. (AACN Research Abstract Award).

6. \*Tanabe, M., **Crago, E.A.**, Hravnak, M., Horowitz, M.B., Gorcsan, J. (2007, March). *Relationship of mild Troponin-I elevations to cardiac function and pulmonary congestion in patients with subarachnoid hemorrhage: Results of the SAHMII study.* Podium. American Association of Cardiologists 56<sup>th</sup> Annual Meeting, New Orleans, LA.
7. \*Tanabe, M., **Crago, E.A.**, Hravnak, M., Horowitz, M.B., Gorcsan, J. (2007, March). *Relationship of acute cardiac dysfunction with clinical severity of subarachnoid hemorrhage: Results of the SAHMII study.* Podium. American Association of Cardiologists 56<sup>th</sup> Annual Meeting, New Orleans, LA.
8. \***Crago, E.**, Hravnak, M., Kong, Y., Sherwood, P., Horowitz, M. (2006, April). *Relationship of catecholamines on markers of myocardial ischemia and outcomes in patients with subarachnoid hemorrhage.* Poster. American Association of Neuroscience Nurses 38<sup>th</sup> Annual Conference, San Diego, California.
9. \*Hravnak, M., **Crago, E.**, Hricik, A., & Horowitz, M.B. (2007, May) *Relationship between serum glucose and outcomes in patients with subarachnoid hemorrhage.* Podium. AACN National Teaching Institute, Atlanta, Georgia. (AACN Research Abstract Award).
10. \*Sherwood, P., **Crago, E.**, Poloyac, S., Bies, R., Hoffman, L., Gallek, M., Kerr, M. (2006, October). *Mechanisms involved in cerebral vasospasm following aneurysmal subarachnoid hemorrhage.* Podium. National Congress on the State of the Science Nursing Research Conference, Washington, D.C.
11. \***Crago, E.**, Hravnak, M., Kong, Y., Sherwood, P., & Horowitz, M. (2006, October). *Relationship of catecholamines on markers of myocardial ischemia in patients with subarachnoid hemorrhage.* Podium. National Congress on the State of the Science Nursing Research Conference, Washington, D.C.
12. \*Frangiskakis JM, Tanabe M, Hravnak M, **Crago E.A.**, Gorcsan J, Horowitz MB, London, B. (2007). *B-adrenergic receptor polymorphism predicts ventricular arrhythmia after subarachnoid hemorrhage.* Podium. Heart Rhythm Society, Denver, CO.
13. \*Frangiskakis, J.M., Tanabe, M., Hravnak, M., **Crago, E.A.**, Gorcsan, J., Horowitz, M.B., London, B. (2007, November). *The MinK G38S polymorphism associates with atrial arrhythmias after subarachnoid hemorrhage.* Poster. American Heart Association Scientific Session, Orlando, FL.
14. \***Crago, E.**, Thomas, A., Gallek, M., Hricik, A., Horowitz, M. (2008, March). *Combined neuroform stenting and coil embolization of acutely ruptured aneurysms: Report of 41.* Poster. American Association of Neuroscience Nurses, 40<sup>th</sup> Annual Educational Meeting, Nashville, TN.
15. \*Sherwood, P., Kassam, A., Hricik, A., Mintz, A., **Crago, E.**, Donovan, H. (2008, March). *Patient outcomes following endoscopic endonasal approach for tumor removal.* Poster. American Association of Neuroscience Nurses, 40<sup>th</sup> Annual Educational Meeting, Nashville, TN.
16. \*Stippler, M., **Crago, E.**, Levy, E.I., Horowitz, M.B., Kassam, A. (2008, April). *Effect of Continuous Magnesium Infusion on Cerebrospinal Fluid Magnesium Concentration after Aneurysmal Subarachnoid Hemorrhage.* Podium. The 76<sup>th</sup> Annual American Association of Neurological Surgeons. Chicago, Ill.
17. \***Crago, E.**, Sherwood, P., Tanabe, M., Hricik, A., Chang, Y., Hravnak, M., Horowitz, H., Kassam, A., Gorcsan, J., Bender, C. (2008, October). *The relationship between myocardial dysfunction and 12 month neuropsychological outcomes in patients following aneurysmal subarachnoid hemorrhage.* Podium. National State of the Science Congress on Nursing Research Council for the Advancement of Nursing Science, Washington, D.C.
18. \*Hricik, A. J., Sherwood, P., **Crago, E.**, Hoffman, L., Horowitz, M.B., Bender, C. (2008, October). *Prevalence of cognitive dysfunction 1 year following subarachnoid hemorrhage.* Podium. National State of the Science Congress on Nursing Researching Council for the Advancement of Nursing Science, Washington, D.C.
19. \*Sherwood, P., Kassam, A., Hricik, A., Mintz, A., **Crago, E.**, Donovan, H. (2008, October). *Patient outcomes following endoscopic endonasal approach for tumor removal.* Podium. National State of



the Science Congress on Nursing Research Council for the Advancement of Nursing Science, Washington, D.C.

20. Newberry, A., Sherwood, P., Hricik, A., Bradley, S., **Crago, E.**, Hoffman, L. (2008, October). *Recruitment and Retention in Neurological Research: Strategies to Improve Success*. Podium. National State of the Science Congress on Nursing Research Council for the Advancement of Nursing Science. Washington, D.C.
21. \*§ Miketic, J., Hravnak, M., Horowitz, M., **Crago, E.** (2009, May). *Impact of Myocardial Injury in Patients after Subarachnoid Hemorrhage*. Poster. American Association of Critical Care Nurses National Teaching Institute, New Orleans, La.
22. \*§ Donnelly, M., **Crago, E.**, Sherwood, P., Horowitz, M., Conley, Y., Hricik, A., Kuo, C., Kassam, A., Poloyac, S. (2009, March). *CYP4F2 polymorphic variants are linked to 20-HETE CSF levels and neuropsychological outcomes in aSAH patients*. Poster. 11th International Winter Eicosanoid Conference; Baltimore, MD.
23. \*§ Donnelly M, **Crago E**, Sherwood P, Horowitz M, Hricik A, Kuo J, Poloyac S. (2009, March). *20-HETE CSF levels are linked to neuropsychological outcomes in aSAH patients*. Poster. The 11th International Winter Eicosanoid conference; Baltimore, MD.
24. \*Quolke, V., Bender, C., Kuo, C., **Crago, E.**, Poloyac, S., Sherwood, P. (2010, October). *Objective versus subjective measures of cognitive function following aneurysmal subarachnoid hemorrhage*. Podium. National Nursing State of the Science Meeting, Washington, D.C.
25. \*§ Knisely, D., Kuo, C., Quolke, V., **Crago, E.**, Connely, Y., Poloyac, S., Sherwood, P. (2011, March). *Serotonin transporter gene polymorphisms (5-HTTLPR and 5HTTVNTR) and APOE as genetic markers of depression following aneurysmal subarachnoid hemorrhage*. Poster. The National Undergraduate Research Meeting, Ithaca, NY.
26. \*§ Donnelly, M., **Crago, E.**, Sherwood, P., Poloyac, S. (2011, October). *Cytochrome P450 eicosanoid levels in cerebrospinal fluid and delayed cerebral ischemia in subarachnoid hemorrhage*. Podium. American College of Clinical Pharmacology, Annual Meeting, Pittsburgh, PA.
27. \*Qi, Z., Sugahara, M., **Crago, E.A.**, Chang, Y.F., Lagattuta, T.F., Yousef, K., Friedlander, R.M., Hravnak, M.T., Gorcsan J 3<sup>rd</sup>. (2016, April). *Association of Global Longitudinal Strain with Severity of Neurocardiac Injury in Patients with Subarachnoid Hemorrhage*. Poster. American College of Cardiology National Meeting 2016, Orlando, FL.
28. \*Qi, Z., Sugahara, M., **Crago, E.A.**, Chang, Y.F., Lagattuta, T.F., Yousef, K., Friedlander, R.M., Hravnak, M.T., Gorcsan J 3<sup>rd</sup>. (2016, April). *Neurocardiac Injury in Patients with Subarachnoid Hemorrhage is associated with Regional Left Ventricular Discoordination*. Poster. American College of Cardiology National Meeting 2016, Orlando, FL.
29. \*Qi Z, Sugahara M, **Crago EA**, Chang YF, Lagattuta TF, Yousef K, Friedlander RM, Hravnak MT, Gorcsan J 3<sup>rd</sup>. (2016, June). *Changes in echocardiographic global longitudinal strain are associated with neurocardiac injury in patients with subarachnoid hemorrhage*. Poster. American Society of Echo cardiologists, Seattle, WA.
30. \*Qi, Z., Sugahara, M., **Crago, E.A.**, Chang, Y.F., Lagattuta, T.F., Yousef, K., Friedlander, R.M., Hravnak, M.T., Gorcsan J 3<sup>rd</sup>. (2016, June). *Dispersion of Left Ventricular Segmental Peak Longitudinal Strain as a New Marker of Neurocardiac Injury in Patients with Subarachnoid Hemorrhage*. Poster. American Society of Echo cardiologists, Seattle, WA.
31. \*Kagiyama, N., Sugahara, M., **Crago, E.A.**, Lagattuta, T.F., Yousef, K.M., Hravnak, M.T., Gorcsan, J. (2017, June). *Right Ventricular Strain as a New Marker of Neuro-cardiac Injury in Patients with Subarachnoid Hemorrhage*. Poster. American Society of Echocardiography National Meeting, Baltimore, MD.
32. \* Kagiyama, N., Sugahara, M., **Crago, E.A.**, Lagattuta, T.F., Yousef, K.M., Hravnak, M.T., Gorcsan, J. (2017, June). *Reduced Global Longitudinal Strain is associated with In-hospital Mortality in Patients with Subarachnoid Hemorrhage and Preserved Ejection Fraction*. Poster.

American Society of Echocardiography National Meeting, Baltimore, MD.

33. \*Kagiyama, N., Sugahara, M., Hasselberg, N.E., **Crago, E.A.**, Lagattuta, T.F., Yousef, K.M., Hravnak, M.T., Gorcsan, J III. (2017, February). *Biventricular Cardiac Dysfunction on Neurocardiac Injury Assessed by Strain Imaging is associated with In-hospital Mortality in Subarachnoid Hemorrhage*. Poster. American Heart Association National Meeting, Houston, TX.
34. \*Kagiyama, N., Sugahara, M., Hasselberg, N.E., **Crago, E.A.**, Lagattuta, T.F., Yousef, K.M., Hravnak, M.T., Gorcsan, J III. (2017, February). *Biventricular Strain as a New Marker of Severity of Neurocardiac Injury in Patients with Subarachnoid Hemorrhage*. Poster. American Heart Association National Meeting, Houston, TX.
35. \*§ OHandley, A., Slas, E., Chuang, Y., **Crago, E.** (2018, April). *Age and Gender Influence Survival after aSAH*. Podium. National Undergraduate Research Conference, Oklahoma City, OK.
36. \*Tuite P, **Crago E.** (2018, November). *Using Structure Telehealth Simulated Experiences with Senior and Graduate Level Nursing Students to Promote Clinical Reasoning in Community Settings*. Poster. American Association of Colleges of Nursing Baccalaureate Education Conference, New Orleans, LA.
37. \*§ Slas, E., Chuang, Y., **Crago, E.** (2019, April). *The Association Between Plasma Estrogen, Neurocardiac Injury and Outcomes after Aneurysmal Subarachnoid Hemorrhage*. Podium. National Undergraduate Research Conference, Kennesaw, Ga.
38. \*§ Greenwald, A., Ren, D., Fisher, A., **Crago, E.** (2020, April). *The Association Between Fatigue and Functional Outcomes after Aneurysmal Subarachnoid Hemorrhage*. Podium. National Undergraduate Research Conference, Bozeman, Montana. (Conference canceled).
39. \*Tuite P, **Crago E.** (2020, April). *Using Structure Telehealth Simulated Experiences to Promote Clinical Judgement*. Podium. 2020 Institute for Educational Excellence Conference Opening Doors to Transform Nursing Education, Raleigh Durham, SC. (Conference canceled).
40. \*Heinsberg LW, Weeks DE, Alexander SA, **Crago EA**, Minster RL, Poloyac SM, Conley YP. (2020, October). *Associations Between DNA Methylation Trajectories for Genes Regulating Iron Homeostasis and Patient Outcomes Up to One Year After Subarachnoid Hemorrhage*. Poster. 70<sup>th</sup> Meeting of the American Society of Human Genetics, Virtual.
41. \*§ Chung, M., Zhirui, D., Ren, D., Isola, K., **Crago, E.** (2024, April). *The Association Between Area Deprivation Index and Outcomes after Subarachnoid Hemorrhage*. Podium. National Undergraduate Research Conference, Long Beach, Ca.
42. \*§ Isola, K., Chung, M., **Crago, E.** (2024, April). *The Influence of Age and Biologic Sex on Presenting Symptoms of Subarachnoid Hemorrhage*. Podium. National Undergraduate Research Conference, Long Beach, Ca.

## Regional

1. \*Kerr, M., Nemoto, E., Yonas, H., Kassam, A., **Crago, E.** (2001, March). *Vasospasm detection following SAH using cerebral oximetry*. Podium. Eastern Nursing Research Society 13<sup>th</sup> Annual Scientific Sessions, Atlantic City, NJ.
2. \***Crago, E.**, Kerr, M., Kassam, A., Yonas, H. (2001, March). *Clinical presentation of fever, vasospasm and clinical neurologic deterioration following subarachnoid hemorrhage*. Podium. Eastern Nursing Research Society 13<sup>th</sup> Annual Scientific Sessions, Atlantic City, NJ.
3. \***Crago, E.**, Kerr, M., Fails, M., Yonas, H. (2002, March). *Effect of preexisting cardiac disease on cardiac complications, angiographic vasospasm and neurological deterioration following subarachnoid hemorrhage*. Podium. Eastern Nursing Research Society 14<sup>th</sup> Annual Scientific Sessions, University Park - Penn State University, PA.
4. Kerr, M., **Crago, E.**, Yonas, H. (2002, March). *Standardizing criteria for measuring vasospasm, neurological deterioration and ischemia following subarachnoid hemorrhage*. Podium. Eastern Nursing Research Society 14<sup>th</sup> Annual Scientific Sessions, University Park - Penn State University, PA.

5. \*§ **Crago E**, Kerr M, Fails M, Yonas H. (2002, March). *Effect of preexisting cardiac disease on cardiac complications, angiographic vasospasm and neurological deterioration following subarachnoid hemorrhage*. Poster. Eastern Nursing Research Society 14<sup>th</sup> Annual Scientific Sessions, Penn State University, PA.
6. \***Crago, E.**, Kerr, M.E., Baldesseri, M., Horowitz, M., Kassam, A., Yonas, H. (2003, March). *Impact of cardiac complications on outcomes in patients with subarachnoid hemorrhage*. Podium. Eastern Nursing Research Society 15<sup>th</sup> Annual Scientific Sessions, New Haven, CT.
7. \***Crago, E.**, Kong, Y., Kerr, M., Yonas, H., Horowitz, M., Kassam, A. (2004, March). *Relationship between aneurysm site and 2 year outcomes in patients following subarachnoid hemorrhage*. Podium. Eastern Nursing Research Society 16<sup>th</sup> Annual Scientific Symposium, Boston, MA.
8. \***Crago E.**, Kerr, M., Levy, E., Horowitz, M., Yonas, H., Kassam A., Stippler M. (2005, March). *Effect of continuous magnesium infusion on cerebral vasospasm and 3 month outcomes following subarachnoid hemorrhage*. Podium. Eastern Nursing Research Society 17<sup>th</sup> Annual Scientific Symposium, New York, NY.
9. \*Kong, Y., Kerr, M., **Crago, E.**, (2005, March). *Temperature changes by treatment groups after aneurysmal subarachnoid hemorrhage (SAH)*. Poster. Eastern Nursing Research Society 17<sup>th</sup> Annual Scientific Sessions, New York, NY.

### Local

1. \*§ Lorenzi, L., Kerr, M.E., Yonas, H., Kassam, A., Alexander, S., **Crago, E.** (2000). Influence of delaying treatment after symptoms develop from subarachnoid hemorrhage (SAH) on outcome: A preliminary analysis. Podium. Greater Pittsburgh 12<sup>th</sup> Annual Nursing Research Conference, Pittsburgh, PA.
2. Newberry, A., Sherwood, P., Hricik, A., Bradley, S., **Crago, E.**, Hoffman, L. (2008, October). *Recruitment and retention in neurological research: Strategies to improve success*. Podium. Greater Pittsburgh Nursing Research Conference, Pittsburgh, PA.
3. \*§ **Crago, E.**, Kerr, M., Fails, M., Yonas, H. (2002). Effect of preexisting cardiac disease on cardiac complications, angiographic vasospasm and neurological deterioration following subarachnoid hemorrhage. Poster. 3<sup>rd</sup> Annual Clinical and Research Poster Session Sponsored by Sigma Theta Tau Eta Chapter, University of Pittsburgh School of Nursing, Pittsburgh, PA.

### Invited

1. Poloyac, S., Kohanic, P., **Crago, E.**, Sherwood, P. (2007, July). *Using interdisciplinary teams in research*. Clinical and Translational Science Institute (T32) Summer Internship Program, University of Pittsburgh, Pittsburgh, PA.
2. **Crago, E.**, (2012, February). *What is research and why do we do it*. Pittsburgh Aneurysm Support group, Pittsburgh, PA.
3. **Crago, E.**, (2012, March). *Vascular Stability after Neurological Insult*. 7<sup>th</sup> Annual Acute Stroke Management Conference, Pittsburgh, PA.
4. **Crago, E.**, (2013, February). *Transcranial Dopplers after Aneurysmal Subarachnoid Hemorrhage*. Pittsburgh Aneurysm Support group, Pittsburgh, PA.
5. **Crago, E.**, (2015, September). *Optimizing Hemodynamics and Perfusion after Stroke*. 1<sup>st</sup> Annual Excelsa Health Evidence Based Practice Symposium, Greensburg, PA.
6. **Crago, E.**, (2021, October). *Neurological Manifestations and Stroke in COVID 19*. 7<sup>th</sup> Annual Excelsa Health Evidence Based Practice Symposium, Greensburg, PA.
7. **Crago, E.**, (2023, May). *Hormones as Biomarkers of Outcomes after Hemorrhagic Stroke*. 2023 International Nurses' Day Commemorative Activity West China-Pittsburgh Nursing Development Online Forum, West China School of Nursing, Sichuan University, China.

### Teaching

<b>Primary Teacher</b>				
<b>Term/Years</b>	<b>Course Number &amp; Title</b>	<b>No. of Students</b>	<b>Level</b>	<b>Didactic or Clinical</b>
2024-Spring	Primary Teacher NUR3287 Research Design and Methods	4	PhD	Didactic
2016-Current Summer, Fall, Spring	Primary Teacher NUR 1121 Advanced Clinical Decision Making	25-100	Senior BSN	Didactic
2016-Current Summer, Fall, Spring	Instructor NUR 1121 Advanced Clinical Decision Making	25-100	Senior BSN	Clinical
2020-current Fall Term	Instructor NUR0020 Pathophysiologic Foundations of Nursing Care	200	Sophomore BSN	Didactic
2016 Spring Term	Clinical Instructor NUR1121c	8	Senior BSN	Clinical - Emergency Department
2013	Co-Primary Instructor NUR 3030 Research Development	5	PhD-DNP	Didactic

<b>Lecturer/Guest Lecturer</b>				
<b>Term/Years</b>	<b>Course Number &amp; Title</b>	<b>No. of Students</b>	<b>Level</b>	<b>Topic</b>
2006-2015 Fall	CNS Role Class	5-10	MSN/DNP	Overview of the role of CNS as a Researcher
2007-present	NURNP 2105 & NUR 2106 Critical Care & Cardiopulmonary Clinical Emphasis	10-20	ACNP/DNP	Intracranial Hemorrhage, Subarachnoid Hemorrhage & Other Life Threatening Headaches
2010	NUR 2000 Research for Evidence Based Practice I	56	Graduate	The interaction of theory, research, and clinical expertise in the development of evidence based nursing practice
2013	NUR 2031 Diagnostic Physical Exam Across the Lifespan	~67	Graduate	Competency testing for Physical Exam
2014	NUR 3030 Research Development	4	PhD	Pros and Cons of K99 application
2016	NUR 2004 Advanced Pathophysiology Across the Life Span	80	Graduate	Neurologic structure function and disorders

## **PhD Dissertations**

Lingjue Li, PharmD, PhD  
University of Pittsburgh School of Pharmacy  
*Alterations of Cerebral Blood Flow after Neurovascular Diseases*  
2017-2019; Committee Member

Lacey Wright Heinsberg, RN, PhD  
University of Pittsburgh School of Nursing  
*Multi-omics of the Iron Homeostasis Pathway in Patient Outcomes Following aSAH*  
2016- 2020; Committee Member

Uraporn Chuaykarn  
Chulalongkorn University Thailand  
*The Effect of an Integrative Cognitive Training Program by Family Caregivers on Cognitive Function Among Person with Traumatic Brain Injury*  
2023-present; Co-Advisor

Sondos Equlan, MSN  
University of Pittsburgh School of Nursing  
2023- present; Advisor

## **Doctorate in Nursing Practice – Projects**

Charles Warner, RN, ACNP, DNP  
University of Pittsburgh School of Nursing  
*Standardized Labeling of Continuous Infusions to Reduce Errors in the Critical Care Transport Setting*  
2017-2018; Committee Member

Deborah Hess, RN, CNS, DNP  
University of Pittsburgh School of Nursing  
*Evaluation of Music Intervention on Physiologic Indicators and Mood of Hospitalized Heart Failure Patients*  
2018-2020; Committee Member

J Julian Palmer-Davies, RN, BSN  
University of Pittsburgh School of Nursing  
*Implementing and evaluating a hypotension management protocol in patients with sepsis in the emergency department based on dynamic monitoring from the EV1000 monitor and ClearSight cuff*  
2021-present; Committee Member

Natalie Lotter, BSN, BS, RN  
University of Pittsburgh School of Nursing  
*Evaluating the Impact of a COPOT Based Pain Treatment Protocol on Opioid Usage in a Cardiothoracic Intensive Care unit*  
2021-present; Committee Member

## **Nursing School – PhD Students**

Joyce Miketic, RN PhD  
University of Pittsburgh School of Nursing  
*Relationship between Elevated Cardiac Troponin I and Functional Recovery and Disability in Patients after Aneurysmal Subarachnoid Hemorrhage*  
2007-2010; mentor

Khalil Yousef, RN, PhD

University of Pittsburgh School of Nursing  
*Elevated Intracranial Pressure Predicts Poor Function and Death after Subarachnoid Hemorrhage*  
2009-2014; Doctoral student, mentor  
2016-2020; Post-Doctoral Scholar, mentor

Mujahid Altamimi, RN, BSN  
University of Pittsburgh School of Nursing  
2019-2021; mentor

Tara Davis, RN, BSN  
University of Pittsburgh School of Nursing  
2019-2021; mentor

Sondos Eqylan, MSN  
University of Pittsburgh School of Nursing  
2023 – present; Advisor

### **Nursing School – Graduate Students**

John James, RN BSN  
University of Pittsburgh School of Nursing Anesthesia Research Project  
2002, mentor/instructor

Michelle Fails, RN, BSN  
University of Pittsburgh, Graduate student  
*Effect of preexisting cardiac disease on cardiac complications, angiographic vasospasm and neurological deterioration following subarachnoid hemorrhage*  
2003: mentor

Ray Pentz, RN, BSN  
University of Pittsburgh School of Nursing Anesthesia Research Project  
2004, mentor/instructor

Melissa Fike, RN BSN  
University of Pittsburgh School of Nursing Anesthesia Research Project  
2005, mentor/instructor

Jeanie Miller, RN, BSN  
Duquesne University School of Nursing  
Research Practicum CRNP  
2005; mentor/instructor

Michelle Kaus, RN, BSN  
University of Pittsburgh School of Nursing Anesthesia Research Project  
2006, mentor/instructor

Lauren Korn-Naveh, RN BSN  
University of Pittsburgh School of Nursing Graduate Student  
*Myocardial Dysfunction after Acute Aneurysmal Subarachnoid Hemorrhage: Case Studies*  
2007; mentor/instructor

Jason Hamilton, RN BSN  
University of Pittsburgh School of Nursing Graduate Student  
*Myocardial Dysfunction after Acute Aneurysmal Subarachnoid Hemorrhage: Case Studies*  
2007; mentor/instructor

Heather Butler, RN BSN  
University of Pittsburgh School of Nursing Anesthesia Research Project  
2008, mentor/instructor

Kristen Svardi, RN BSN  
University of Pittsburgh School of Nursing Anesthesia Research Project  
2008, mentor/instructor

April Brewster, RN BSN  
University of Pittsburgh School of Nursing Anesthesia Research Project  
2008, mentor/instructor

Lisa Matelan, RN BSN  
University of Pittsburgh School of Nursing Anesthesia Research Project  
2009, mentor/instructor

Kristin Adkins, RN BSN  
University of Pittsburgh School of Nursing Anesthesia Research Project  
*Correlation Between Emergency Department Symptoms and Clinical Outcomes in the Patient with Aneurysmal Subarachnoid Hemorrhage*  
2009, mentor/instructor

Kelly Kerris, RN BSN  
University of Pittsburgh School of Nursing Anesthesia Research Project  
*The Effect of Beta Blockers and Ace Inhibitors on Cardiac Abnormalities after Aneurysmal Subarachnoid Hemorrhage*  
2009, mentor/instructor

Thomas Price, BS  
University of Pittsburgh Graduate research student  
*Impaired Work Productivity Following Aneurysmal Subarachnoid Hemorrhage*  
2012; Mentor

Grace Mallampalli RN, BSN  
University of Pittsburgh Research Practicum  
*Elevated Plasma Estradiol is Associated with Global Longitudinal Strain after aSAH.*  
2017; Mentor

### **Nursing School – Honors Students**

Amber McAteer, RN, BSN  
*The Relationship Between BNP, Neurocardiac Injury Severity, Noninvasive Cardiac Output, and Outcomes After Aneurysmal Subarachnoid Hemorrhage*  
2015-2015; Committee Member

Eleanor Turi, RN, BSN  
*Psychosocial Co-Morbidities Related to Return to Work Following Aneurysmal Subarachnoid Hemorrhage*  
2014-2016; Committee Member

Michelle Chung  
2023; Primary Advisor  
6-2023-7-2023 McNair's Fellowship Mentor

## **Nursing School – Undergraduate Students**

Ian Condon

Undergraduate Research project and presentation

*Comparison of Coiling Verses Clipping on 6-Month Outcomes Following Subarachnoid Hemorrhage*  
2002; Mentor

Lauren Rissman

Undergraduate Research project manuscript development

2008; Mentor

Nicole Roselli

Undergraduate research student

2010; Mentor

Thomas Horsfall

Undergraduate student Clinical Neuroscience

Abstract Development

2013; Mentor

Allison O’Handley

Undergraduate research student

Podium presentation NCUR-*Age and Gender Influence Survival after aSAH*

2015-2018; Mentor

Albert Chandler Lee

Undergraduate research student

*Global Longitudinal Strain May Be a Determinant of Quality of Life After Subarachnoid Hemorrhage*

2018; Mentor

Emma Slas

Undergraduate research student

Podium presentation NCUR-*The Association Between Plasma Estrogen, Neurocardiac Injury and Outcomes after Aneurysmal Subarachnoid Hemorrhage*

2015-2019; Mentor

Amanda Greenwald

Undergraduate research student

Podium presentation NCUR-*The Association Between Fatigue and Functional Outcomes after Aneurysmal Subarachnoid Hemorrhage*

2019-2020; Mentor

Lauren Meyer

Undergraduate research student

2020-2022; Mentor

Rebecca Chang

Undergraduate research student

2022 –present

Mentor

Divya Narayan

Undergraduate research student

2022-present; Mentor



Jamie Gilligan  
Undergraduate research student  
2022-present; Mentor

Kelly Isola  
Undergraduate research student  
2023-present, Mentor

### Service

#### **University of Pittsburgh School of Nursing**

2008-current	CPR Instructor
2015-present	BSN Council
2021	Clinical Competency revision task force Clinical Judgement Crosswalks
2016	Grant Reviewer Leslie Hoffman Scholarship Award
2016	Kazakhstan Professional Development Program Module 7: Care of the Hospitalized Patient -Assigned to unit 8 - Care of the patient with altered mental status and Unit 12 - care of the patient with trauma. The modules were formatted to consist of 30 hours of lecture with power points and 30 hours of learning activities to accompany the lectures.
2017-present	Faculty Practice Committee
2019-2024	Chair
2018-present	PhD Committee
2021-present	ATC Department Representative
2021-present	Holistic Admission Task Force
2019-present	Honors Committee
2021	Internal Research Funding Grant Reviewer

#### **University of Pittsburgh Medical Center**

2012-2015	Aneurysm Support Group, Pittsburgh Pa
2020-2022	Consultant (Pease, PI; Neurological Surgery UPMC) – Development of a Clinical Prediction Model of Vasospasm after aSAH Using Data Science Techniques
2021-2023	Co-Primary Investigator/ Faculty consultant, - Shadyside Hospital study: <i>An Evaluation of Sleep Patterns in Hospitalized Patients</i>

#### **Mutual Aid Ambulance Service**

2022-present	Dean, Paramedic Program Mutual Aid-Excelsa Health Paramedic Training Center
2021-present	Board Member – elected/appointed m Chair Health Safety and Training Committee Member Personnel, Operations, Facility, Feasibility Committees

#### **Community**

1990-2010	Lecturer for the Pennsylvania State Police Camp Cadet on TBI, drinking and driving
1990- 2010	Guest lecturer at various schools and community groups on trauma and drunk driving

1990-present            Yearly Paramedic Instruction at Mutual Aid Ambulance Service,  
Greensburg, Pa: Neurological Emergencies, Toxicology, Hematology,  
Immunology, Endocrinology, ACLS and PALS

2001-2010            Hempfield School District health fairs and job fairs

2001-present        Community CPR and First Aid Instructor

2007-2020            Participate in Annual Comcast Cares activities in local community

2012-present        Parish nurse CUMC Youngwood (appointed - not certified)

2015-present        Westmoreland County Food Bank Volunteer