



## Bibliography: Critical Care Clinical Publications

1. Achamallah N, Fried J, Love R, Matusov Y, Sharma R: Pupillary Light Reflex Is Not Abolished by Epinephrine and Atropine Given During Advanced Cardiac Life Support in Patients Who Achieve Return of Spontaneous Circulation. *Journal of Intensive Care Medicine*, April 2021.
2. Al-Obaidi SZ, Atem FD, Stutzman SE, Olson DM: Impact of increased intracranial pressure on pupillometry: a replication study. *Critical Care Explorations*: October 2019, Volume 1, Issue 10, p e0054. DOI: 10.1097/CCE.0000000000000054
3. Al-Obaidi SZ, Atem FD, Stutzman SE, Aiyagari V, Olson DM: Investigating the association between eye colour and the Neurological Pupil index. *Australian Critical Care*: October 2019, <https://doi.org/10.1016/j.aucc.2019.10.001>
4. Anderson M, Elmer J, Shutter L, Puccio A, Alexander S: Integrating quantitative pupillometry into regular care in a neurotrauma intensive care unit. *Journal of Neuroscience Nursing*, 50(1): 30-36, 2018. DOI: 10.1097/JNN.0000000000000333.
5. Aoun SG, et al.: Detection of delayed cerebral ischemia using objective pupillometry in patients with aneurysmal subarachnoid hemorrhage. *Journal of neurosurgery*, 1: 1-6, 2019.
6. Aoun SG, et al.: Objective pupillometry as an adjunct to prediction and assessment for oculomotor nerve injury and recovery: Potential for practical applications. *World neurosurgery*, 121: e475-e480, 2019.
7. Bader MK: Gizmos and gadgets for the neuroscience intensive care unit. *Journal of Neuroscience Nursing*, 38(4): 248, 2006.
8. Behrends M, Niemann CU, Larson MD: Infrared pupillometry to detect the light reflex during cardiopulmonary resuscitation: A case series. *Resuscitation*, 83(10): 1223-1228, 2012.
9. Bell S, Lee C, Zeeman J, Kearney M, Macko L, Cartwright C. Neurological Assessment of the Adult Hospitalized Patient. *American Association of Neuroscience Nurses*. 2021; <https://aann>.
10. Boev AN, Fountas KN, Karampelas I, Boev C, Machinis TG, Feltes C, Okosun I, Dimopoulos V, Troup C: Quantitative pupillometry: Normative data in healthy pediatric volunteers. *Journal of Neurosurgery: Pediatrics*, 103(6): 496-500, 2005.
11. Breckwoldt J, Arntz H-R, Infrared pupillometry during cardiopulmonary resuscitation for prognostication – a new tool on the horizon? 2012.
12. Brown JT, Connelly M, Nickols C, Neville KA: Developmental changes of normal pupil size and reactivity in children. *Journal of pediatric ophthalmology and strabismus*, 52(3): 147-151, 2015.
13. Butt AA, Atem FD, Stutzman SE, Aiyagari V, Venkatachalam AM, Olson DM, Yokobori S: Contribution of pupillary light reflex assessment to Glasgow Coma Scale for prognostication in patients with traumatic brain injury. *Journal of Neurocritical Care*, March 2021.
14. Cartwright C, Battick K, Coffman J, Crespo Y, Fagan C, Szego S. Neurological Assessment of the Hospitalized Child. *American Association of Neuroscience Nurses*. 2023;
15. Chen JW, Gombart ZJ, Rogers S, Gardiner SK, Cecil S, Bullock RM: Pupillary reactivity as an early indicator of increased intracranial pressure: The introduction of the neurological pupil index. *Surgical neurology international*, 2: 82, 2011.
16. Chen JW, Vakil-Gilani K, Williamson KL, Cecil S: Infrared pupillometry, the neurological pupil index and unilateral pupillary dilation after traumatic brain injury: Implications for treatment paradigms. *Springerplus*, 3(1): 548, 2014.
17. Cortes MX, Siaron KB, Nadim HT, Ahmed KM, Romito JW: Neurological Pupil Index as an Indicator of Irreversible Cerebral Edema: A Case Series. *Journal of Neuroscience Nursing*, April 2021.
18. Crippa IA, Pelosi P, Quispe-Cornejo AA, Messina A, Corradi F, Taccone FS, Robba C: Automated Pupillometry as an Assessment Tool for Intracranial Hemodynamics in Septic Patients. *Cells*, 11(14): 2206, 2022.



19. Dowlati E, Sarpong K, Kamande S, Carroll AH, Murray J, Wiley A, Peterson B, Mai JC, Chang JJ, Aulisi EF, Armonda RA, Felbaum DR: Abnormal neurological pupil index is associated with malignant cerebral edema after mechanical thrombectomy in large vessel occlusion patients. *Neurological Sciences*, March 2021.
20. Du R, Meeker M, Bacchetti P, Larson MD, Holland MC, Manley GT: Evaluation of the portable infrared pupillometer. *Neurosurgery*, 57(1): 198-203, 2005.
21. El Ahmadi TY, Bedros N, Stutzman SE, et al.: Automated Pupillometry as a Triage and Assessment Tool in Patients with Traumatic Brain Injury. *World Neurosurgery*, 145: 163-169, 2020. DOI: 10.1016/j.wneu.2020.09.152
22. Emelifeonwu JA, Reid K, Rhodes JK, Myles L: Saved by the pupillometer! – a role for pupillometry in the acute assessment of patients with traumatic brain injuries? *Brain Injury*, 32(5): 675-677, 2018. DOI: 10.1080/02699052.2018.1429021.
23. Filipe JAC, Falcao-Reis F, Castro-Correia J, Barros H: Assessment of autonomic function in high level athletes by pupillometry. *Autonomic Neuroscience*, 104(1): 66-72, 2003.
24. Fountas KN, Kapsalaki EZ, Machinis TG, Boev AN, Robinson JS, Troup EC: Clinical implications of quantitative infrared pupillometry in neurosurgical patients. *Neurocritical care*, 5(1): 55-60, 2006.
25. Freeman AD, McCracken CE, Stockwell JA: Automated Pupillary Measurements Inversely Correlate With Increased Intracranial Pressure in Pediatric Patients With Acute Brain Injury or Encephalopathy. *Pediatric Critical Care Medicine*, July, 2020.
26. Ghauri MS, Ueno A, Mohammed S, Miulli DE, Siddiqi J: Evaluating the Reliability of Neurological Pupillary Index as a Prognostic Measurement of Neurological Function in Critical Care Patients. *Cureus*, 14(9): e28901, 2022. DOI:10.7759/cureus.28901
27. Giamarino K, Blessing R, Boelter C, Thompson JA, Reynolds SS: Exploring the Relationship Between Objective Pupillometry Metrics and Midline Shift. *Journal of Neuroscience Nursing*, December, 2021.
28. Godau J, Bharad K, Rösche J, et al.: Automated Pupillometry for Assessment of Treatment Success in Nonconvulsive Status Epilepticus. *Neurocrit Care*, 36(1): 148-156, 2021. DOI:10.1007/s12028-021-01273-6
29. Godau J, Bierwirth C, Rösche J, Bösel J: Quantitative Infrared Pupillometry in Nonconvulsive Status Epilepticus. *Neurocrit Care*, 35(1): 113-120, 2021. DOI: 10.1007/s12028-020-01149-1
30. Hill M, Moreda M, Navarro J, Mulkey M. Assessing Patients With Altered Level of Consciousness. *Crit Care Nurse*. 2023;43(4):58-65. doi:10.4037/ccn2023449
31. Hirsch KG, Abella BS, Amorim E, et al. Critical Care Management of Patients After Cardiac Arrest: A Scientific Statement From the American Heart Association and Neurocritical Care Society. *Circulation*. 2024;149(2):e168-e200. doi:10.1161/CIR.0000000000001163
32. Jahns F-P, Miroz JP, Messerer M, Daniel RT, Taccone FS, Eckert P, Oddo M: Quantitative pupillometry for the monitoring of intracranial hypertension in patients with severe traumatic brain injury. *Critical Care*, 23(1): 155, 2019.
33. Jolkovsky EL, Fernandez-Penny FE, Alexis M, Benson LN, Wang BH, Abella BS: Impact of acute intoxication on quantitative pupillometry assessment in the emergency department. *JACEP Open*, October 2022.
34. Kerr RG, Bacon AM, Baker LL, Gehrke JS, Hahn KD, Lillegraven CL, Renner CH, Spilman SK: Underestimation of pupil size by critical care and neurosurgical nurses. *American Journal of Critical Care*, 25(3): 213-219, 2016. DOI: 10.4037/ajcc2016554.
35. Kim KW, Jo YH, Park SM, Lee DK, Jang D-H. Neurological pupil index during cardiopulmonary resuscitation is associated with admission to ICU in non-traumatic out-of-hospital cardiac arrest patients. *Signa Vitae*, 2022. DOI:10.22514/sv.2022.038.
36. Kim TJ, Park SH, Jeong HB, et al.: Neurological Pupil Index as an Indicator of Neurological Worsening in Large Hemispheric Strokes. *Neurocrit Care*, 33(2): 575-581, 2020. DOI: 10.1007/s12028-020-00936-0
37. Kim TJ, Ko S-B: Implication of neurological pupil index for monitoring of brain edema. *Acute and Critical Care*, 33(1): 57-60, 2018.
38. Larson MD: Mechanism of opioid-induced pupillary effects. *Clinical Neurophysiology*, 119(6): 1358-1364, 2008.



39. Larson MD, Muhiudeen I: Pupillometric analysis of the 'absent light reflex'. *Archives of Neurology*, 52(4): 369-372, 1995.
40. Lee H, Choi SH, Park B, Hong YH, Lee HB, Jeon SB: Quantitative assessments of pupillary light reflexes in hospital-onset unresponsiveness. *BMC Neurology*, June 2021.
41. Lee S, Jung DE, Park D, et al. Intraoperative neurological pupil index and postoperative delirium and neurologic adverse events after cardiac surgery: an observational study. *Sci Rep*. 2023;13(1):13838. Published 2023 Aug 24. doi:10.1038/s41598-023-41151-z
42. Lele AV, Wahlster S, Khadka S, et al. Neurological Pupillary Index and Disposition at Hospital Discharge following ICU Admission for Acute Brain Injury. *J Clin Med*. 2023;12(11):3806. Published 2023 Jun 1. doi:10.3390/jcm12113806
43. Lussier BL, Olson DM, Aiyagari V. Automated pupillometry in neurocritical care: Research and practice. *Curr Neurol Neurosci Rep*. 08 2019;19(10):71. doi:10.1007/s11910-019-0994-z.
44. Lussier BL, Stutzman SE, Atem F, Venkatachalam AM, Perera AC, Barnes A, Aiyagari V, Olson DM: Distributions and reference ranges for automated pupillometer values in neurocritical care patients. *Journal of Neuroscience Nursing*, December 2019, Volume 51, Issue 6, p 335–340. DOI: 10.1097/JNN.0000000000000478.
45. Manley GT, Larson MD: Infrared pupillometry during uncal herniation. *Journal of neurosurgical anesthesiology*, 14(3): 223-228, 2002.
46. Marshall M, Deo R, Childs C, Ali A: Feasibility and variability of automated pupillometry among stroke patients and healthy participants: Potential implications for clinical practice. *Journal of Neuroscience Nursing*, 51(2): 84-88, 2019.
47. Mazhar K, Olson DM, Atem FD, et al.: Supratentorial intracerebral hemorrhage volume and other CT variables predict the neurological pupil index. *Clinical Neurology and Neurosurgery*, 200: 106410, 2021. DOI: 10.1016/j.clineuro.2020.106410
48. McGetrick ME, Schneider N, Olson DM, Aiyagari V, Miles D: Automated Infrared Pupillometer Use in Assessing the Neurological Status in Pediatric Neurocritical Care Patients: Case Reports and Literature Review. *Journal of Child Science*, June 2021.
49. McKay RE, Larson MD: Detection of opioid effect with pupillometry. *Autonomic Neuroscience*, August 2021.
50. McNett M, Moran C, Grimm D, Gianakis A: Pupillometry trends in the setting of increased intracranial pressure. *Journal of Neuroscience Nursing*, 50(6): 357-361, 2018.
51. McNett M, Moran C, Janki C, Gianakis A: Correlations between hourly pupillometer readings and intracranial pressure values. *Journal of Neuroscience Nursing*, 49(4): 229-234, 2017. DOI: 10.1097/JNN.0000000000000290.
52. Meeker M, Du R, Bacchetti P, Privitera CM, Larson MD, Holland MC, Manley G: Pupil examination: Validity and clinical utility of an automated pupillometer. *J Neurosci Nurs*, 37(1): 34-40, 2005.
53. Miroz JP, Ben-Hamouda N, Bernini A, Romagnosi F, Bongiovanni F, Roumy A, Kirsch M, Liaudet L, Eckert P, Oddo M: Neurological Pupil index for Early Prognostication After Venoarterial Extracorporeal Membrane Oxygenation. *Chest Journal*, February, 2020
54. Murillo R, Crucilla C, Schmittner J, Hotchkiss E, Pickworth W: Pupillometry in the detection of concomitant drug use in opioid-maintained patients. *Methods Find Exp Clin Pharmacol*, 26(4): 271-275, 2004.
55. Neerukonda SV, Schneider NJ, Aiyagari V, Olson DM: Automated Pupillometry Value Differences Serve as a Prognostic Indicator Even When They are Within Normal Range. *The Journal of Neurological and Neurosurgical Nursing*, December, 2021.
56. Nolan JP, et al.: European Resuscitation Council and European Society of Intensive Care Medicine Guidelines 2021: Post-resuscitation care. *Journal of Intensive Care Medicine and Resuscitation*, 2021
57. Nyholm B, Obling L, Hassager C, Grand J, Møller J, Othman M, Kondziella D, Kjaergaard J. Superior reproducibility and repeatability in automated quantitative pupillometry compared to standard manual assessment, and quantitative pupillary response parameters present high reliability in critically ill cardiac patients. *PLoS ONE* 17(7): e0272303, 2022. <https://doi.org/10.1371/journal.pone.0272303>



58. Obling L, Hassager C, Illum C, et al. Prognostic value of automated pupillometry: an unselected cohort from a cardiac intensive care unit. *Eur Heart J Acute Cardiovasc Care*. 2020;9(7):779-787. doi:10.1177/2048872619842004
59. Oddo M, Taccone FS, Petrosino M, Badenes R, Blandino-Ortiz A, Bouzat P, Caricato A, et al.: The Neurological Pupil Index for Outcome Prognostication in People with Acute Brain Injury (ORANGE): A Prospective, Observational, Multicentre Cohort Study. *The Lancet Neurology* 0, no. 0 (August 28, 2023). [https://doi.org/10.1016/S1474-4422\(23\)00271-5](https://doi.org/10.1016/S1474-4422(23)00271-5).
60. Oddo M, et al.: Quantitative versus standard pupillary light reflex for early prognostication in comatose cardiac arrest patients: An international prospective multicenter double-blinded study. *Intensive Care Medicine*, 44(12): 2102-2111, 2018. DOI: 10.1007/s00134-018-5448-6.
61. Olson DM, Fishel M: The use of automated pupillometry in critical care. *Critical Care Nursing Clinics*, 28(1): 101-107, 2016. DOI: 10.1016/j.cnc.2015.09.003.
62. Olson DM, Stutzman S, Saju C, Wilson M, Zhao W, Aiyagari V: Interrater reliability of pupillary assessments. *Neurocritical care*, 24(2): 251-257, 2016. DOI: 10.1007/s12028-015-0182-1.
63. Olson DM, Stutzman SE, Atem F, Kincaide JD, Ho T-T, Carlisle BA, Aiyagari V: Establishing normative data for pupillometer assessment in neuroscience intensive care: The “end-panic” registry. *Journal of Neuroscience Nursing*, 49(4): 251-254, 2017. DOI: 10.1097/JNN.0000000000000296.
64. Ong C, Hutch M, Barra M, Kim A, Zafar S, Smirnakis S: Effects of osmotic therapy on pupil reactivity: Quantification using pupillometry in critically ill neurologic patients. *Neurocritical care*, 30(2): 307-315, 2019.
65. Osman M, Stutzman SE, Atem F, Olson D, Hicks AD, Ortega-Perez S, Aoun SG, Salem A, Aiyagari V: Correlation of objective pupillometry to midline shift in acute stroke patients. *Journal of Stroke and Cerebrovascular Diseases*, 2019.
66. Papangelou A, Zink EK, Chang W-TW, Frattalone A, Gergen D, Gottschalk A, Geocadin RG: Automated pupillometry and detection of clinical transtentorial brain herniation: A case series. *Military medicine*, 183(1-2): e113-e121, 2018. DOI: 10.1093/milmed/usx018.
67. Privitera CM, Neerukonda SV, Aiyagari V, Yokobori S, Puccio AM, Schneider NJ, Stutzman SE, Olson DM, END PANIC Investigators: A differential of the left eye and right eye neurological pupil index is associated with discharge modified Rankin scores in neurologically injured patients. *BMC Neurology*, July 2022.
68. Rajajee V, et al.: Neurocritical Care Society Guidelines – Guidelines for Neuroprognostication in Comatose Adult Survivors of Cardiac Arrest. *Neurocritical Care*, March 2023
69. Riker R, Sawyer M, Fischman V, May T, Lord C, Eldridge A, Seder D: Neurological pupil index and pupillary light reflex by pupillometry predict outcome early after cardiac arrest. *Neurocritical Care*, 2019.
70. Robba C, Zanier ER, Lopez Soto C, et al. Mastering the brain in critical conditions: an update. *Intensive Care Med Exp*. 2024;12(1):1. Published 2024 Jan 5. doi:10.1186/s40635-023-00587-3
71. Rollins MD, Feiner JR, Lee JM, Shah S, Larson M: Pupillary effects of high-dose opioid quantified with infrared pupillometry. *Anesthesiology: The Journal of the American Society of Anesthesiologists*, 121(5): 1037-1044, 2014.
72. Romagnosi F, Bernini A, Bongiovanni F, Iaquaniello C, Miroz JP, Citerio G, Taccone FS, Oddo M: Neurological Pupil Index for the Early Prediction of Outcome in Severe Acute Brain Injury Patients. *Brain Sciences*, May 2022.
73. Saju C, Barnes A, Kuramatsu JB, et al. Describing Anisocoria in Neurocritically Ill Patients. *Am J Crit Care*. 2023;32(6):402-409. doi:10.4037/ajcc2023558
74. Shoyombo I, Aiyagari V, Stutzman SE, Atem F, Hill M, Figueroa SA, Miller C, Howard A, Olson DM: Understanding the relationship between the neurologic pupil index and constriction velocity values. *Scientific Reports*, 8(1): 6992, 2018.
75. Stout D, Dullaway J, McMahan H, Daniel BA, Olson DM: Reflections on Patient Care Technicians Obtaining Pupillometer Readings in a Neuroscience Intensive Care Unit. *Journal of Neuroscience Nursing*, December 202
76. Stutzman S, Plype P, Marshall J, Speir K, Schneider N, Tran C, Laird S, Aiyagari V, Olson D: Inter-device reliability of the NPi-200 and NPi-300 pupillometers. *Journal of Clinical Neuroscience*, April, 2022.



77. Stutzman, S., Olson, D., Venkatachalam, A., Barnes, A., Atem, F. The Presence of Cataract Does Not Influence Assessment of The Pupillary Light Reflex Using Automated Pupillometry. *Journal of Health and Caring Sciences*, 3(2), 85-95, 2021.
78. Tokuda Y, Nakazato N, Stein G: Pupillary evaluation for differential diagnosis of coma. *Postgraduate medical journal*, 79(927): 49-51, 2003.
79. Traylor JI, et al.: Quantitative pupillometry in patients with traumatic brain injury and loss of consciousness: A prospective pilot study. *Journal of Clinical Neuroscience*, June, 2021.
80. Trent T, Vashisht A, Novakovic S, Kanter G, Nairon E, Lark A, Tucker A, Reddy V, McCreary M, Stutzman SE, Olson DM. Pupillary light reflex measured with quantitative pupillometry has low sensitivity and high specificity for predicting neuroworsening after traumatic brain injury. *J Am Assoc Nurse Pract*. 2023 Feb 1;35(2):130-134. doi: 10.1097/JXX.0000000000000822.
81. Witting MD: Validity of simple measurement to diagnose pupillary dilation. *The American journal of emergency medicine*, 23(2): 155-158, 2005.
82. Witting MD, Goyal D: Interrater reliability in pupillary measurement. *Annals of emergency medicine*, 41(6): 832-837, 2003.
83. Zafar SF, Suarez JI: Automated pupillometer for monitoring the critically ill patient: A critical appraisal. *Journal of critical care*, 29(4): 599-603, 2014.
84. Zhao W, Stutzman S, DaiWai O, Saju C, Wilson M, Aiyagari V: Inter-device reliability of the npi-100 pupillometer. *Journal of Clinical Neuroscience*, 33: 79-82, 2016.