

The EEG as a Biomarker of Perioperative Brain Vulnerability – Patrick L. Purdon, Ph.D.

References

- Bakkour, A., Morris, J. C., Wolk, D. A., & Dickerson, B. C. (2013). The effects of aging and Alzheimer's disease on cerebral cortical anatomy: specificity and differential relationships with cognition. *Neuroimage*, 76, 332-344.
- Besch, G., Liu, N., Samain, E., Pericard, C., Boichut, N., Mercier, M., ... & Pili-Floury, S. (2011). Occurrence of and risk factors for electroencephalogram burst suppression during propofol-remifentanil anaesthesia. *British journal of anaesthesia*, 107(5), 749-756.
- Brandt, S. P., Walsh, E. C., Cornelissen, L., Lee, J. M., Berde, C., Shank, E. S., & Purdon, P. L. (2020). Case studies using the electroencephalogram to monitor anesthesia-induced brain states in children. *Anesthesia & Analgesia*, 131(4), 1043-1056.
- Castillo, X., Castro-Obregón, S., Gutiérrez-Becker, B., Gutiérrez-Ospina, G., Karalis, N., Khalil, A. A., ... & Zille, M. (2019). Re-thinking the etiological framework of neurodegeneration. *Frontiers in neuroscience*, 13, 463358.
- Chan, M. T., Cheng, B. C., Lee, T. M., Gin, T., & CODA Trial Group. (2013). BIS-guided anesthesia decreases postoperative delirium and cognitive decline. *Journal of neurosurgical anesthesiology*, 25(1), 33-42.
- Ching, S., Cimenser, A., Purdon, P. L., Brown, E. N., & Kopell, N. J. (2010). Thalamocortical model for a propofol-induced α -rhythm associated with loss of consciousness. *Proceedings of the National Academy of Sciences*, 107(52), 22665-22670.
- Deiner, S., & Culley, D. J. (2017). Anesthesia for the older patient. *Geriatrics for Specialists*, 91-100.
- Evered, L. A., Chan, M. T., Han, R., Chu, M. H., Cheng, B. P., Scott, D. A., ... & Short, T. G. (2021). Anaesthetic depth and delirium after major surgery: a randomised clinical trial. *British journal of anaesthesia*, 127(5), 704-712.
- Flores, F. J., Hartnack, K. E., Fath, A. B., Kim, S. E., Wilson, M. A., Brown, E. N., & Purdon, P. L. (2017). Thalamocortical synchronization during induction and emergence from propofol-induced unconsciousness. *Proceedings of the National Academy of Sciences*, 114(32), E6660-E6668.
- Fritz, B. A., Kalarickal, P. L., Maybrier, H. R., Muench, M. R., Dearth, D., Chen, Y., ... & Avidan, M. S. (2016). Intraoperative electroencephalogram suppression predicts postoperative delirium. *Anesthesia & Analgesia*, 122(1), 234-242.
- Fritz, B. A., Maybrier, H. R., & Avidan, M. S. (2018). Intraoperative electroencephalogram suppression at lower volatile anaesthetic concentrations predicts postoperative delirium occurring in the intensive care unit. *British journal of anaesthesia*, 121(1), 241-248.

- Giattino, C. M., Gardner, J. E., Sbahi, F. M., Roberts, K. C., Cooter, M., Moretti, E., ... & MADCO-PC Investigators. (2017). Intraoperative frontal alpha-band power correlates with preoperative neurocognitive function in older adults. *Frontiers in systems neuroscience*, 11, 24.
- Gou, R. Y., Hsieh, T. T., Marcantonio, E. R., Cooper, Z., Jones, R. N., Travison, T. G., ... & SAGES Study Group. (2021). One-year medicare costs associated with delirium in older patients undergoing major elective surgery. *JAMA surgery*, 156(5), 462-470.
- Hesse, S., Kreuzer, M., Hight, D., Gaskell, A., Devari, P., Singh, D., ... & García, P. S. (2019). Association of EEG Trajectories during Emergence from Anaesthesia with Delirium in the Post-Anaesthesia Care Unit, an Early Sign of Postoperative Complications. *British journal of anaesthesia*, 122(5), 622.
- Hughes, S. W., & Crunelli, V. (2005). Thalamic mechanisms of EEG alpha rhythms and their pathological implications. *The Neuroscientist : a review journal bringing neurobiology, neurology and psychiatry*, 11(4), 357–372.
<https://doi.org/10.1177/1073858405277450>
- Koch, S., Radtke, F., & Spies, C. (2019). A call for a more rigorous screening of postoperative delirium. *Annals of Translational Medicine*, 7(Suppl 6).
- Koch, S., Windmann, V., Chakravarty, S., Kruppa, J., Yürek, F., Brown, E. N., ... & Spies, C. (2021). Perioperative electroencephalogram spectral dynamics related to postoperative delirium in older patients. *Anesthesia & Analgesia*, 133(6), 1598-1607.
- Lewis, L. D., Weiner, V. S., Mukamel, E. A., Donoghue, J. A., Eskandar, E. N., Madsen, J. R., ... & Purdon, P. L. (2012). Rapid fragmentation of neuronal networks at the onset of propofol-induced unconsciousness. *Proceedings of the National Academy of Sciences*, 109(49), E3377-E3386.
- Mukamel, E. A., Pirondini, E., Babadi, B., Wong, K. F. K., Pierce, E. T., Harrell, P. G., ... & Purdon, P. L. (2014). A transition in brain state during propofol-induced unconsciousness. *Journal of Neuroscience*, 34(3), 839-845.
- Peterson, S. E., Yang, A. H., Bushman, D. M., Westra, J. W., Yung, Y. C., Barral, S., ... & Chun, J. (2012). Aneuploid cells are differentially susceptible to caspase-mediated death during embryonic cerebral cortical development. *Journal of Neuroscience*, 32(46), 16213-16222.
- Purdon, P. L., Pierce, E. T., Mukamel, E. A., Prerau, M. J., Walsh, J. L., Wong, K. F. K., ... & Brown, E. N. (2013). Electroencephalogram signatures of loss and recovery of consciousness from propofol. *Proceedings of the National Academy of Sciences*, 110(12), E1142-E1151.
- Purdon, P. L., Sampson, A., Pavone, K. J., & Brown, E. N. (2015). Clinical electroencephalography for anesthesiologists: part I: background and basic signatures. *Anesthesiology*, 123(4), 937-960.

- Purdon, P. L., Sampson, A., Pavone, K. J., & Brown, E. N. (2015). Clinical electroencephalography for anesthesiologists: part I: background and basic signatures. *Anesthesiology*, 123(4), 937-960.
- Shao, Y. R., Kahali, P., Houle, T. T., Deng, H., Colvin, C., Dickerson, B. C., ... & Purdon, P. L. (2020). Low frontal alpha power is associated with the propensity for burst suppression: an electroencephalogram phenotype for a “vulnerable brain”. *Anesthesia & Analgesia*, 131(5), 1529-1539.
- Soehle, M., Dittmann, A., Ellerkmann, R. K., Baumgarten, G., Putensen, C., & Guenther, U. (2015). Intraoperative burst suppression is associated with postoperative delirium following cardiac surgery: a prospective, observational study. *BMC anesthesiology*, 15, 1-8.
- Stockinger, M. P., Bogena, H. R., Lücke, A., Diekkrüger, B., Cornelissen, T., & Vereecken, H. (2016). Tracer sampling frequency influences estimates of young water fraction and streamwater transit time distribution. *Journal of hydrology*, 541, 952-964.
- Sumner, M., Deng, C., Evered, L., Frampton, C., Leslie, K., Short, T., & Campbell, D. (2023). Processed electroencephalography-guided general anaesthesia to reduce postoperative delirium: a systematic review and meta-analysis. *British Journal of Anaesthesia*, 130(2), e243-e253.
- Walsh, E. C., Lee, J. M., Terzakis, K., Zhou, D. W., Burns, S., Buie, T. M., ... & Purdon, P. L. (2018). Age-dependent changes in the propofol-induced electroencephalogram in children with autism spectrum disorder. *Frontiers in Systems Neuroscience*, 12, 23.
- Wildes, T. S., Mickle, A. M., Abdallah, A. B., Maybrier, H. R., Oberhaus, J., Budelier, T. P., ... & ENGAGES Research Group. (2019). Effect of electroencephalography-guided anesthetic administration on postoperative delirium among older adults undergoing major surgery: the ENGAGES randomized clinical trial. *Jama*, 321(5), 473-483.