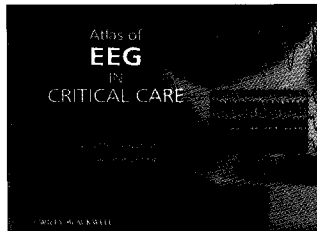


ATLAS OF EEG IN CRITICAL CARE. 2010. By Lawrence J. Hirsch, Richard P. Brenner. Published by Wiley-Blackwell. 334 pages. C\$170 approx.

Rated ★★★★★

Patients in the intensive care unit (ICU) undergo extensive systemic monitoring that has traditionally included arterial blood pressure, oxygen saturation, fluid status, and blood chemistry. The nervous system, meanwhile, is monitored a few times per nursing shift using so-called “neuro-vitals”, during a brief interval when anesthetic or sedative drugs are turned off to check pupils, handgrip strength, and ability to follow simple commands. The last decade has seen a dramatic increase in understanding of the need to monitor the brain in the ICU, and despite the development of new multimodal invasive monitoring techniques, scalp EEG continues to be at the forefront of neuromonitoring. The finding that many patients in the ICU have non-convulsive seizures (at least 80% of all seizures in this setting), the ability to detect ischemia prior to imaging changes, and the ability to monitor sedation have all led to new techniques for more effective and accessible EEG monitoring among the critically ill.



Drs. Hirsch and Brenner are among the most experienced and knowledgeable in the field, and their atlas represents this well. The introductory section, while admittedly brief, does provide an accessible and clearly explained background for those new to EEG, such that the interested general intensivist could become comfortable with EEG basics using this chapter alone as an introduction. The EEG samples are clear and well labeled, with concise descriptions and often containing insightful pearls based on experience and an understanding of common errors made by beginners.

The following two chapters cover encephalopathies (perhaps the most common EEG patterns seen in the ICU), and seizures and status epilepticus. Again the major points are very well covered, and common sources of error are given emphasis. The concept of evolving changes characteristic of ictal patterns is given appropriate attention, since many beginners are misled by ‘spiky’ appearing continuous activity that is usually artifactual or a normal variant. The common problem of distinguishing spike-wave discharges from triphasic waves also receives significant attention, and they introduce the concept of the ‘ictal-interictal continuum’ in this chapter.

A full chapter is then dedicated to discussion of periodic discharges and other controversial patterns, in which the authors acknowledge the ambiguity around the meaning of some uncertain patterns, as well as discussing the significance of more classic patterns such as generalized periodic epileptiform discharges (GPEDs) and periodic lateralized epileptiform discharges (PLEDs). The evolving nomenclature is given brief attention, with the exception of so-called ‘SIRPIDs’, or stimulus induced rhythmic, periodic, or ictal discharges. This remains a controversial concept, and while it does seem over-represented in

this book, the samples shown are compelling. Chapters 5 and 6 cover the more straight-forward EEG findings in vascular disease and a discussion of important artifacts that may lead to misinterpretation in the ICU.

Chapter 7 is the most unique contribution of this atlas, providing a rather in-depth but highly readable introduction into advanced EEG techniques, such as prolonged monitoring, spectrograms, and even intracranial EEG as it correlates with data recorded from microdialysis catheters. The brief introduction and subsequent full-color examples are extremely clear and the concepts will be well-understood even by beginners, although in many centers this technology may not be available and of less importance at this point. Nonetheless, this section provides clear examples of how these techniques can contribute to early detection of ischemia and seizures, and makes a strong argument for pursuing them further. The authors appropriately note that these compressed arrays should not replace reading of the raw EEG data.

The final chapter, with contributions from Drs. Young and Houlden, provide an introduction to the use of evoked potentials in the ICU. Again, the introduction provides an excellent starting point to understanding the uses and limitations of these techniques. The clinical utility of somatosensory evoked potentials (SSEPs) in trauma and after cardiac arrest is well-covered, including potential confounding factors and practical limitations.

This unique atlas provides a reasonably comprehensive overview of common and controversial EEG patterns in the ICU, and is laden with practical pearls of interpretation. It should serve the interested intensivist well, and is an excellent starting point for neurologists and neurosurgeons interested in the evolving fields of neurocritical care and EEG monitoring. Future editions may benefit from a slightly more detailed discussion of pathophysiology as it relates to EEG changes, but overall the authors are to be commended on this excellent atlas of EEG in the ICU.

Gary Hunter
Saskatoon, Saskatchewan, Canada