

Preface



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Guest Editors

The era of brain monitoring and intervention in perinatal-neonatal medicine is upon us. We have learned a great deal about obstetrical, pulmonary, cardiovascular, and nutritional management of the fetus and newborn, thereby assuring the survival of most of our at-risk patients. Long-term neurologic complications remain common, however, at an unacceptable cost to the child, family and society.

To reduce the incidence and impact of neurologic impairments, we must develop better means of real-time evaluation of brain function, rather than relying on important but chronologically distant follow-up evaluations. In this issue, an international cadre of scientists explores the tools currently available in this fledgling field of brain monitoring in the neonate. Continuous electroencephalogram (EEG) monitoring currently provides the most insight into brain function, so most of this issue is devoted to that modality. After Drs. Fritz and Delivoria-Papadopoulos delineate mechanisms of brain injury in the newborn, Dr. Rosén describes the physiologic basis for continuous EEG monitoring, and Dr. Griesen provides a note of caution before he reviews the rationale for the use of this technology. Brain monitoring in term and preterm infants are presented by Drs. De Vries and Toet, and Dr. Hellström-Westas, respectively.

As in the early stages of many medical advances, access to information often precedes the ability to use it wisely. As the window to the neonatal brain begins to open, the appropriate use of data derived from continuous EEG monitoring is vital, especially with respect to treatment of seizure

discharges, for which the article by Dr. Clancy provides guidance. An article by Drs. Whitelaw and White outlining appropriate training and reporting for those using continuous EEG follows, then Dr. Fifer and colleagues complete this section with a glimpse into high-density EEG monitoring, which may provide knowledge that single- or dual-channel EEG monitors cannot.

At every stage in life, sleep is crucial to normal brain function, but it is particularly important in the developing and often healing brain of the newborn. The increasing ability to monitor sleep on a real-time basis is reviewed by Dr. Graven. This issue of *Clinics in Perinatology* then concludes with a look at two more methods of brain monitoring that hold great promise in the near future: near-infrared spectroscopy, reviewed by Drs. Wolfberg and du Plessis, and mass spectrometry, reviewed by Drs. Spitzer and Chace.

We urge the reader to consider these fascinating new technologies and examine their use in the everyday care of the neonate. It is our firm belief that the information provided through brain monitoring will substantially enhance our understanding of neonatal neurologic injury and markedly improve outcomes for all hospitalized newborn infants.

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