Cerebral Monitoring in the OR and ICU

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PREFACE

The evaluation of an ICU patient's degree of consciousness has taken on great importance. The problem of unintended intraoperative revival and compensation has resulted in the need for monitoring the level of unconsciousness with instruments that measure the patient's cerebral activity rather than vital signs (arterial pressure, cardiac rate, tear secretion, etc.). In addition, the need for salvaging organs for transplantation requires the anesthesiologist to understand cerebral mechanisms to diagnose brain death before the disappearance of vital signs which renders the organs useless for transplantation. In the final analysis the physician has had to change his vision of cortical activity considered, if not strictly indispensable, at least of secondary importance relative to the hemodynamic consequences to the patient. The problem is even more complex in those nations where the teaching of anesthesia and reanimation is combined, presenting the physician with the twofold chore of cerebral monitoring to prevent intraoperative awakening and to detect brain death.

Technological innovation has created simple, precise instruments to replace ECG devices which are subject to artifacts caused by patient movement or interference from other electronic instruments in the operating room or ICU. However, the use of modern devices such as the bis-monitor, entropy,

etc. is not widely taught in university courses, forcing the anesthesiologist to embark on a disorganized study of the various instruments, often not accompanied by an understanding of cerebral activity. Prof. Freye's book is an organized treatment of cerebral activity which offers a clear explanation of the generation of cerebral impulses and the potential value that cerebral monitoring holds for patients. Although many complex algorithms appear in the book, the text explains modern monitoring techniques with such simplicity that even physicians with little knowledge of mathematics and physics will easily understand the subject. Moreover, the study of evoked potentials, which is invaluable in orthopedic surgery and many other pathologies treated in Intensive Care, is presented clearly and logically. Attractive graphics contribute to the pleasure of reading the book, making the subject less tiring for readers who are confronting the subject for the first time. Physicians who are accustomed to using the ECG will also find that the close examination of this topic alone makes the book worthwhile.

The *Journal of Clinical Monitoring and Computing* is pleased to present Prof. Freye's book because it is in perfect harmony with our publication's goal of assisting clinicians in the daily use of the most advanced monitoring and computer techniques in patient care.

Vincenzo Lanza

Editor-in-Chief, *Journal of Clinical Monitoring and Computing*