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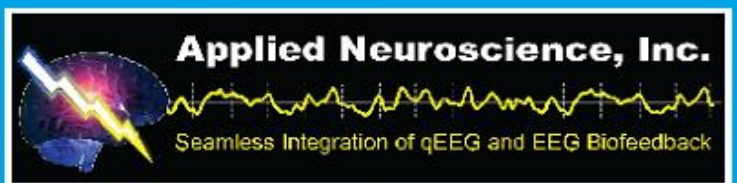
Databases:
A Guide Map to Precision
for Neurofeedback Protocols, Training
and Research

This issue represents the first of its kind in the evolution of the *Journal of Neurotherapy*, a special issue dedicated specifically to databases. I am very pleased to have had the opportunity to act as the guest editor for this issue and to present this outstanding set of papers dealing with the development and validation of databases. I want to express my appreciation to David Trudeau, the Editor-in-Chief of the *Journal of Neurotherapy* and to Darlene Nelson, Managing Editor of the *Journal*, for their considerable help working with me on this endeavor. For many of us in the field of neurotherapy, quantitative electroencephalographic (QEEG) databases are very important. For those of us that rely on databases for research and for clinical practice, they represent the cornerstone of the methodology necessary to help us in differentiating cognitive states, clinical disorders, and EEG changes throughout the lifespan.

The development and validation of databases has also been a very controversial area. In the 1990s there were papers published by the American Academy of Neurology and the American Clinical Neurophysiological Society criticizing the use of quantitative EEG based on digital analysis. Hoffman et al. (1999) represented a response in which all of the earlier criticisms were described and put forth a significant rebuttal. Since that time there have not been any significant published criticisms of databases similar to those that appeared before our response. This indicates that as of the summer of 1999 significant prog-

ress had been made in the development, validation, and use of databases in the evaluation of traumatic brain injury, attention deficit disorders, learning disabilities, seizure disorders, depression, anxiety disorders, and perhaps additional neurological and neuropsychiatric disorders. Adam Clarke and R. Barry's group in Australia have published 13 papers since 1998, most during 2001 and 2002 and some during the current year, showing the effectiveness of quantitative EEG for evaluation of attention deficit disorder, oppositional defiant disorder, reading disabilities, and the differentiation of these from other behavioral disorders (see References).

Though significant recent progress has been made in the development of databases there are still numerous problems dealing with the limitation of databases to primarily eyes-open, eyes-closed or relatively few cognitive tasks. There are problems related to selection of non-clinical controls and their screening as well as selection criteria for individuals experiencing different clinical disorders. Databases still must be improved in terms of the number of subjects for different age groups, criteria for artifact rejection, selection of band passes for data collection and cross validation for different multi-channel EEG instruments.

The papers in this volume were developed by people who have had considerable experience in either the development of databases or in working with them. They point out strengths, limitations, and provide in some cases, comparative information for the different databases that are currently in use. It is hoped that the information contained in this issue will provide a foundation for people who are interested in using databases and particularly for the future development of better databases which will include both eyes-open and eyes-closed as well as numerous cognitive tasks with large numbers of cases both clinical and non-clinical in each age group. I can say clearly from my own personal experience having worked with well over 2,000 patients with attentional problems as well as other disorders during the past 25 years that with the development of databases my own ability to fine tune existing protocols and develop new protocols for neurotherapy has been greatly improved leading to better treatment, better long term outcome, and fewer training sessions. For me, quantitative EEG with a good database is a road map that clearly points the direction for the development of treatment paradigms. Many others in our field have experienced the same benefits. In this context, I emphasize that when we speak of quantitative EEG this does not necessarily mean 19 channels; it can be one channel to 19 or even more. At the present time there are no databases for 24, 32 or more channels. Perhaps those will be developed in the future but at

the present time the standard 19-channel data collection with appropriate use of existing databases can lead to very accurate and outstanding clinical results.

Our readers are invited to comment on the various points of view presented and to write letters with constructive commentary which may be published in future issues of the *Journal*. Hopefully these will lead to improvements in existing databases and toward the development of more advanced databases. (Address correspondence to: Darlene Nelson, Managing Editor, *Journal of Neurotherapy*, 394 Road 34, Merino, CO 80741.)

Joel F. Lubar, PhD
Guest Editor

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