A Summary of the First Symposium on Pediatric Neurotransmitter Diseases May 18-19, 2002, Washington, DC- K. Michael Gibson PhD

On the basis of feedback questionnaires, the first symposium on pediatric neurotransmitter disorders (PNDs) was a huge success. Attendees walked away with increased awareness of the clinical and metabolic spectrum of PNDs, the underlying pharmacology and biochemistry involved in pathology, the barriers to identification, and an outline of potential gene and pharmacologic therapeutics. With these successes in mind, and a foundation laid from which to build, the question arises-where do we go from here?

Major impediments to the development of new treatment regimens and longitudinal evaluation of patients with PNDs include low awareness of these diseases by both clinicians and laboratory specialists, and a general reluctance to perform invasive sampling such as lumbar puncture. Both of these impediments can only be overcome by continued education through additional symposia, patient reports and reviews in the primary literature, and the attraction of additional basic and clinical researchers into the field(s) associated with the PNDs. Longitudinal evaluation of patients and improved treatment regimens cannot occur if the patients remain undiagnosed. This is most likely the case for many patients with PNDs today.

For those patients that have been identified, there is a need to develop the guidelines for a systematic and through evaluation. This may require involvement not only of primary care physicians, but also neurologists, neuroradiologists, geneticists, movement disorder specialists, speech pathologists, genetic counselors, occupational therapists, dieticians and others. In the age of managed care, such multidimensional evaluations are discouraged because of cost. Moreover, the fact that the US has only a single specialist laboratory focusing on the neurochemical evaluation of potential PND patients, and no single clinical center focused on these diseases, testifies to the lack of awareness of these diseases in both the medical and scientific communities. Such deficiciencies hamper educational objectives and longitudinal evaluation of patients.

To overcome these obstacles, continued translational research initiatives from the NINDS will be highly beneficial. Such initiatives serve to not only raise awareness, but further recruit new basic and clinical scientists into the PND area. The development and funding of a select number of clinical centers, both in the US and abroad, focused extensively on PNDs will spectrum. At the same time, equipping these centers with a diagnostic laboratory component should significantly enhance our detection rate for the PNDs. Such clinical centers are also likely to attract basic scientists with a research interest in the PNDs, and these investigators will be well served by close liaisons with clinicians and laboratory specialists involved in patient diagnosis and follow-up. Centers with diverse expertise focused on PNDs will enable basic researchers to study patients for whom testing suggests a disorder of neurotransmitter metabolism, but for whom a basic defect remains undetected.

Finally, what is the current research agenda for the PND Association, and what can be done in the short term? While stem cell and gene therapy approaches remain a tantalizing carrot, they are still distant goals. What can be done for the patients today? First, physicians, basic scientists and laboratory specialists need to be educated about the PNDs. Theses disorders are "out there", and have been for many years. Unfortunately, invasive diagnostic testing has been underutilized for the PNDs, perhaps because of a reluctance to perform lumbar punctures. Secondly, limited clinical trials of small groups of patients with PNDs can be performed, and must be performed if new therapeutic insights are to be drawn. Finally, continued investigation of animal models of the PNDs, including knockout and transgenic mouse systems, will provide critical information on the underlying pathology of the PNDs, serving as a springboard for developing new treatment paradigms. Close and continued collaboration between basic and clinical scientists, and laboratory specialists, remain the surest way to move this agenda ahead for PND patients.