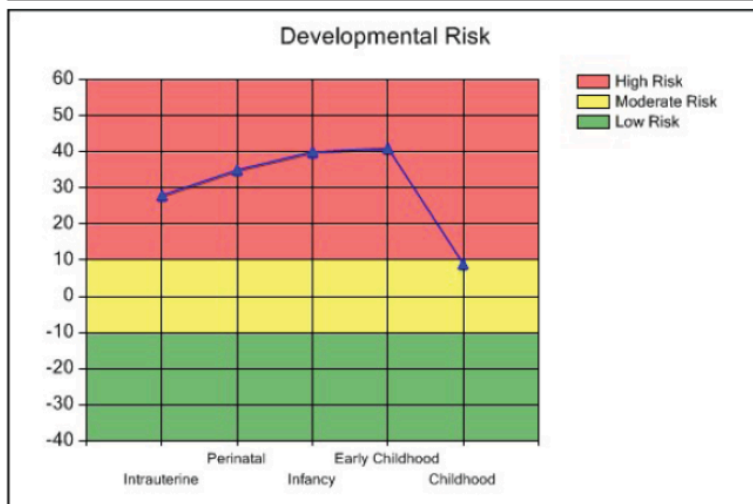
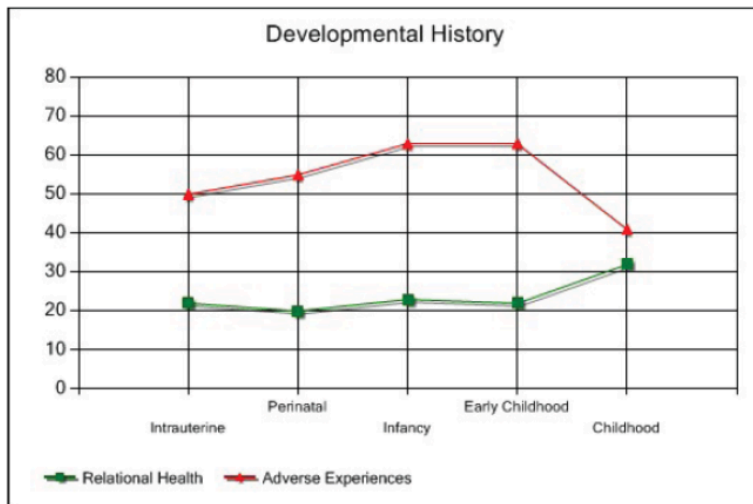


## Overview of the Neurosequential Model of Therapeutics<sup>®</sup>

The Neurosequential Model of Therapeutics (NMT) is a developmentally sensitive, neurobiology-informed approach to clinical problem solving. NMT is not a specific therapeutic technique or intervention. It is an approach that integrates core principles of neurodevelopment and traumatology to inform work with children, families and the communities in which they live. The Neurosequential Approach has three key components – training/capacity building, assessment and then, the specific recommendations for the selection and sequencing of therapeutic, educational and enrichment activities that match the needs and strengths of the individual.

The NMT assessment process examines both past and current experience and functioning. A review of the history of adverse experiences and relational health factors helps create an estimate of the timing and severity of developmental risk that may have influenced brain development (see graph). In the sample graph, both the timing and severity of risk and resilience factors are plotted (top graph) to generate an overall developmental risk estimate (bottom graph). In this case this individual was at high risk for developmental disruptions – with potential significant functional consequences – during the entire first five years of life.



A review of current functioning identifies problems and strengths in current functioning and helps generate a visual representation of the child's estimated current functioning organized into a neurobiological fashion; this generates a Functional Brain Map (see below). The NMT "mapping" process helps identify various areas in the brain that appear to have functional or developmental problems; in turn, this helps guide the selection and sequencing of developmentally sensitive interventions. These interventions are designed to replicate the normal sequence of development beginning with the lowest, most abnormally functioning parts of the brain (e.g., brainstem) and moving sequentially up the brain as improvement is seen. The NMT is grounded in an awareness of the sequential development of the brain; cortical organization and functioning depend upon previous healthy organization and functioning of lower

neural networks originating in the brainstem and diencephalon. Therefore a dysregulated individual (child, youth or adult) will have a difficult time benefiting from educational, caregiving and therapeutic efforts targeted at, or requiring, "higher" cortical networks. This sequential approach is respectful of the normal developmental sequence of both brain development and functional development. Healthy development depends upon a sequential mastery of functions; and a dysregulated individual will be inefficient in mastering any task that requires relational abilities (limbic) and will have a difficult time engaging in more verbal/insight oriented (cortical) therapeutic and educational efforts.

**Client (14 years, 3 months)                      Report Date: 12/4/2010**

4	8	7	2	2	9
11	10	7	2	6	10
3	3	8	1	8	8
	10	5	2	3	
	11	6	4	3	
		4	4		
		8	10		
		9	6		

**Age Typical - 14 to 16**

10	10	10	10	10	10
12	12	12	10	10	11
11	11	12	11	10	12
	11	11	11	12	
	12	12	12	11	
		12	12		
		12	12		
		12	12		

The NMT Web-based Clinical Practice Tools (aka, NMT Metrics) help provide a structured assessment of developmental history of adverse experiences, relational health and current brain-mediated functioning. These NMT Metrics are designed to complement, not replace, existing assessment tools (e.g., CANS, CAFAS) and psychometrics (e.g., CBCL, IES, WISC, WRAT). They are designed to allow use across multiple systems using multiple assessment packages. The primary goal of the NMT Metrics and assessment is to ensure that the clinical team is organizing the client and family's data (and planning) in a developmentally sensitive and neurobiology-informed manner.

Above is an example of a functional brain "map" produced by the web-based NMT Clinical Practice Application. The top image (with the red squares) corresponds to a client (each box corresponds to brain functions mediated by a region/system in the brain. The map is color coded with red indicating significant problems; yellow indicates moderate compromise and green, fully organized and functionally capable). The bottom map is a comparative map for a "typical" same-aged child. The graphic representations allow a clinician, teacher, or parent to quickly visualize important aspects of a

child's history and current status. The information is key in designing developmentally appropriate educational, enrichment and therapeutic experiences to help the child.

This clinical approach helps professionals determine the strengths and vulnerabilities of the child and create an individualized intervention, enrichment and educational plan matched to his/her unique needs. The goal is to find a set of therapeutic activities that meet the child's current needs in various domains of functioning (i.e., social, emotional, cognitive and physical). An individual demonstrating significant problems in brainstem and diencephalic functions may end up with recommended activities that include music, dance, yoga, drumming, various sports, therapeutic massage to more traditional play therapy, sand tray or other art therapies. Later in the treatment process, after improved brainstem and diencephalic functioning, the treatment recommendations would shift to more insight oriented- and cognitive-behavioral interventions such as PCIT or TF-CBT.

The NMT training and capacity building component incorporates didactic teaching with web-based sessions using on clinical cases presented by participating clinicians. It also incorporates multimedia and reading materials that focus on child development, neurobiology, traumatology, attachment theory and a host of related areas relevant to understanding the impact of maltreatment and other developmental insults on the developing child. The CTA has developed an NMT training certification process for individual clinicians and organizations. This training process provides the necessary exposure to the core concepts, practical application and use of the web-based NMT Metrics to establish and maintain fidelity required for examining clinical outcomes and conducting research using the NMT Metrics as part of the evaluation package. Certified clinicians from across the world demonstrate high fidelity and inter-rater reliability when "evaluating" and scoring the same client data.

The NMT is widely applicable to a variety of clinical and educational environments and has been integrated into a variety of settings across the full life cycle – infants through adults - including therapeutic preschools, early head start programs, infant mental health, ECI programs, residential treatment centers, and in numerous private and outpatient clinical practices working with young children, youth and adults. Several large public child protective services and child mental health settings have become certified and routinely use the NMT.

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