

Mani Pavuluri, M.D., Ph.D.

MIND Institute Distinguished Lecturer Series – April 8, 2015

Biographical Information

Mani Pavuluri is MD PhD, Distinguished Fellow of the American Academy of Child and Adolescent Psychiatry (AACAP), Professor at the University of Illinois at Chicago (UIC), Berger-Colbeth Chair in Child Psychiatry, and the Founding Director of the Pediatric Mood Disorders Program and the Pediatric Brain Research And InterventioN (BRAIN) Center.

Dr. Pavuluri is trained as a General Psychiatrist and Child Psychiatrist at Otago University Medical School in New Zealand, Royal Children's Hospital at Melbourne University in Australia and the Australian and New Zealand College of Psychiatrists. She additionally completed American training in Child Fellowship at Rush University, Chicago with Board certification in adult and child Psychiatry across USA, Australia and NZ. She serves on American College of Neuropsychopharmacology (ACNP) Education and Training Committee and the AACAP psychopharmacology initiatives work group and media committee.

Dr. Pavuluri's goal is to understand the multi-domain brain mechanisms in children and adolescents and develop individualized early interventions, with pediatric bipolar disorder (PBD) serving as an illness model. Her work is instrumental in demonstrating that the neurocognitive problems across various affective and cognitive domains persist even after three years of standardized pharmacotherapy. This work is influential in shaping our nation's school curricula to address emotional and cognitive domain difficulties and won her the prestigious Klingenstein Third Generation Award from AACAP for the best paper in mood disorders.

She pioneered the use of functional neuroimaging to construct the first multi-domain brain circuitry model that is impaired in PBD that was recognized by the Brain and Behavior Research Foundation with the prestigious Gerry Klerman Award for outstanding research. The work on how brain mechanisms by which feelings impact thinking led to the development of neuroscience informed child and family focused cognitive behavior therapy. This brought a paradigm shift in Child Psychiatry where negative consequences or punishment are shown to be ineffective in individuals with emotional disturbance. Her team made leading contribution in identifying similarities and differences in cortico-subcortical function between PBD and ADHD that inform pharmacotherapy decision-making. Dr. Pavuluri's work is a trail-blazer in showing differential impact of specific medications on brain function, and in showing how prefrontal regions are normalized earlier than the subcortical regions in PBD. This has been published as the hot topic in American Neuropsychopharmacology in 2015.

Dr. Pavuluri has the vision to translate these scientific discoveries to service and draws families from across 30 states in the USA and Canada. She developed pediatric clinical and neuroimaging programs across the world with a wide network of mentees spanning from Japan to Europe. The Child Mania Rating scale that she designed and developed is translated to more than a dozen world languages. She has been a prolific author of books, chapters and peer reviewed manuscripts and serves on multiple editorial boards of the international journals. She is listed under Top Psychiatrists in America selected by patients, and Best Doctors of America selected by peers since 2004. Dr. Pavuluri received the Jay Hirsch Excellence in Teaching Award selected by her Child Psychiatry Fellows at the UIC in 2014. Her work has been funded by several granting agencies that include the National Center for Research Resources (NCRR), National Institute of Mental Health (NIMH), National Institute of Child Health and Human Development (NICHD), NARSAD, Dana Foundation, Marshall Reynolds Foundation, American Foundation for Suicide Prevention (AFSP) and her grateful families (one of which is the endowed chair).

Presentation Abstract (4:30 pm presentation)

The Functional Model of Brain Circuitry Dysfunction in Pediatric Bipolar Disorder

Objective of the lecture is to demonstrate how science can help solve clinical problems through imaging technology that opens a window into the brain's mechanisms. Pediatric bipolar disorder is selected as a clinical illness model to study affective, cognitive and sensori-motor domains. On behavioral characterization, executive function, working memory, verbal memory attention and affect regulation were uncovered and shown to persist despite medication or illness status. The brain circuitry model was mapped to reveal impaired fronto-limbic, occipito-limbic, occipito-temporo-frontal, dorsal and ventral fronto-striatal, and cortico-cortical circuits. Furthermore, it became apparent that negative emotions impact affective and cognitive circuitry functions, independently and at the interface of the ventral and dorsal brain circuits. This information then led to two complementary programmatic trails of research intervention: (1) Specific pharmacotherapy agents targeted to maximize the neurocognitive function, and reverse the clinical symptoms and the brain circuitry dysfunction, and (2) The neuroscience informed child and family focused cognitive therapy or "RAINBOW" therapy. This research inquiry could serve as a prototype in forging neuroscience informed clinical interventions model termed the **ABCD** model- **A**ssessment, **B**rain functional understanding, **C**hemical intervention, and **D**ynamics of environment addressed through individualized psychosocial intervention.