Preliminary Findings for TLC Applied Research:
Results of Pharmaco-Genotyping Among TLC Students

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The clinical staff at TLC led by Dr. McGrady and Dr. Patel have referred 26 TLC students, who demonstrate a compelling need, for pharmacogenetic testing to Dr. Ruaño Laboratory of Personalized Health at Hartford Hospital.

The twenty-six students referred demonstrate histories of co-occurring DSM-IV diagnoses. Each person also has a history of multiple medication trials and concurrent multi-drug treatments. Parents of the children and adolescents also identified concern about poor results from psychotropic medication. Parents expressed concern for increased dosages prescribed for their children over time and secondary side effects of weight gain, behavior dysregulation and variable response latency associated with medication changes.

Adolescent self reports also demonstrate testimonials of little or no benefit from their medication.

The impact of allelic variation on the metabolism of psychotropic medication is investigated by researchers at the Mayo Clinic as well (Black, O'Kane & Mrazek 2007). The focus of the Mayo Clinic research is antidepressant receptor and transporter targets and variable patient ability to respond to antidepressants.

Dr. Patel, Dr. McGrady and Dr. Ruaño have investigated the ability of 26 referred TLC students to metabolize the medication(s) they are prescribed as part of their treatment.

The Learning Clinic staff also monitors each person's behaviors. Each person referred to TLC is monitored for behavior change across settings e.g. classroom, residential setting and home behaviors. A multiple behavior baseline of 45 days is obtained in order to determine changes in behavior through time and over time. The baseline comparison to future observed behavior assesses results of medication changes and other significant life events on rates of behavior change.

The pharmaco-genotyping was performed for 3 key isoenzymes involved in metabolism of psychotropic drugs: CYP2C9, CYP2C19, and CYP2D6. Results from the pharmacogenetic testing indicate that ninety-two percent (92%) of the 26 individuals have altered drug metabolism function. In such individuals, drug metabolism function for psychotropics is ultra-rapid, deficient or null. Approximately eleven percent (11%) of patients is unable to metabolize the psychotropic medication they were prescribed. It is important to note that the ability of a person to metabolize prescribed medications may also affect treatment efficacy for the many psychotropics with active metabolites.

The personalized approach to pharmaco-genotyping, psychopharmacological management and multiple measurements of treatment effects over time across settings has enabled TLC clinicians to have greater influence over treatment results and medication efficacy.

Dr. Ruaño is the Director of the Genetics Research Center and Laboratory of Personalized Health at the Institute of Living and Hartford Hospital. He is President of Genomas Inc., a private biomedical company incubated at Hartford Hospital.

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