A Path Model for Evaluating Dosing Parameters for Children With Cerebral Palsy

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Dosing of pediatric rehabilitation services for children with cerebral palsy (CP) has been identified as a national priority. Establishing dosing parameters for pediatric physical therapy interventions is critical for informing clinical decision making, health policy, and guidelines for reimbursement. The purpose of this perspective article is to describe a path model for evaluating dosing parameters of interventions for children with CP. The model is intended for dose-related and effectiveness studies of pediatric physical therapy interventions. The premise of the model is: Intervention type (focus on body structures, activity, or the environment) acts on a child first through the family, then through the dose (frequency, intensity, time), to yield structural and behavioral changes. As a result, these changes are linked to improvements in functional independence. Community factors affect dose as well as functional independence (performance and capacity), influencing the relationships between type of intervention and intervention responses. The constructs of family characteristics; child characteristics (eg, age, level of severity, comorbidities, readiness to change, preferences); plastic changes in bone, muscle, and brain; motor skill acquisition; and community access warrant consideration from researchers who are designing intervention studies. Multiple knowledge gaps are identified, and a framework is provided for conceptualizing dosing parameters for children with CP.