The time course of the probability of transition into and out of REM sleep

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Study objectives: A model of rapid eye movement (REM) sleep expression is proposed that assumes underlying regulatory mechanisms operating as inhomogenous Poisson processes, the overt results of which are the transitions into and out of REM sleep. Design: Based on spontaneously occurring REM sleep episodes ("Episode") and intervals without REM sleep ("Interval"), 3 variables are defined and evaluated over discrete 15-second epochs using a nonlinear logistic regression method: "Propensity" is the instantaneous rate of into-REM transition occurrence throughout an Interval, "Volatility" is the instantaneous rate of out-of-REM transition occurrence throughout an Episode, and "Opportunity" is the probability of being in non-REM (NREM) sleep at a given time throughout an Interval, a requisite for transition. Setting: 12:12 light:dark cycle, isolated boxes. Participants: Sixteen male Sprague-Dawley rats Interventions: None. Spontaneous sleep cycles. Measurements and Results: The highest level