Clinical predictors of duration of action of cisatracurium and rocuronium administered long-term.

BACKGROUND: The duration of action of neuromuscular blocking drugs (NBDs) varies between individuals and even within individuals in different settings. OBJECTIVES: To define predictors of variance in duration of action of rocuronium and cisatracurium administered long-term. METHODS: A prospective, double-blind, multicenter trial that included 113 patients scheduled for major abdominal surgery and postoperative admission to the intensive care unit. Patients received repetitive (median, 7) equipotent doses of rocuronium or cisatracurium to maintain deep relaxation (twitch height of the adductor pollicis muscle<25% of baseline). Effects of weight, age, sex, American Society of Anesthesiologists risk score, lowest core temperature, duration of NBD administration, and tobacco smoking history on duration of action of cisatracurium and rocuronium were determined via multiple regression analysis. RESULTS: Only duration of NBD administration was predictive of the duration of action of rocuronium. The predicted increase in time to recovery of the train-of-4 ratio to 0.9 (duration TOF 0.9) per hour of continuous NBD treatment was 12.4 minutes. In contrast, only lowest core body temperature was predictive of cisatracurium's duration of action, and the predicted increase in duration TOF 0.9 per degree Celsius decrease was 9.8 min. CONCLUSION: Duration of NBD treatment is strongly predictive of
the duration of action of rocuronium, and body temperature is predictive of the duration of action of cisatracurium. These data may help decrease the incidence of drug-induced muscle weakness in recovery rooms and surgical intensive care units, particularly if neuromuscular transmission monitoring is not available.