UP-AND-DOWN DESIGNS II: EXACT TREATMENT MOMENTS

BY STEPHEN D. DURHAM*, NANCY FLOURNOY AND ALI A. MONTAZER-HAGHIGHI

The University of South Carolina, The American University and Benedict College

Abstract

Consider a sequence of experiments in which a treatment is applied at a finite number of levels or dosages. and the cumulative number of responses at each level is observed after each trial. We consider such experiments in which the primary objective is to estimate the unknown dose μ that has a probability of response equal to a fixed value Γ, $0 \leq \Gamma \leq 1$. We restrict the unknown distribution of treatments so as to avoid treatment levels that are associated with high probabilities of response. When treatment levels are sequentially assigned to subjects in a way that forms a random walk, we give the exact expectation (and variance) of giving treatments that have high probabilities of response.

1. Introduction. Consider a sequence of experiments in which a treatment is applied at a finite number of levels or dosages, and the cumulative number of responses at each level is observed after each