

Coarse Structural Nested Mean Models (SNMMs, Robins, 2000) and G-estimation can be used to estimate the causal effect of a time-varying treatment from longitudinal observational studies. However, they rely on an untestable assumption of no unmeasured confounding. In the presence of unmeasured confounders, the unobserved potential outcomes are not missing at random, and standard G-estimation leads to biased effect estimates. To remedy this, we investigate the sensitivity of G-estimators of coarse SNMMs to unmeasured confounding, assuming a nonidentifiable bias function which quantifies the impact of unmeasured confounding on the average potential outcome. We present adjusted G-estimators of coarse SNMM parameters and prove their consistency, under the bias modeling for unmeasured confounding. We apply this to a sensitivity analysis for the effect of the ART initiation time on the mean CD4 count at year 2 after infection in HIV-positive patients, based on the prospective AIEDRP database.