Early Withdrawal of Life-Sustaining Therapy for Perceived Neurological Prognosis is Associated with Excess Mortality After Out-of-Hospital Cardiac Arrest

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Introduction: Withdrawal of life-sustaining therapy because of perceived poor neurological prognosis (WLST-N) is a common cause of death after out-of-hospital cardiac arrest. Guidelines recommend against WLST-N before 72 h (WLST-N<72), but WLST-N<72 remains common and may increase mortality.

Methods: We performed a secondary analysis of the Resuscitation Outcomes Consortium’s PRIMED trial including adults surviving >1h after hospital arrival. Our main exposure was WLST-N<72, which was collected for the original trial by chart review. Outcomes were survival to hospital discharge and functionally favorable survival (modified Rankin Score ≤ 3). We used two methods to determine predicted outcomes in the cohort exposed to WLST-N<72 if WLST-N were delayed until after 72h. First, we used pre-exposure covariates to create a propensity score modeling the probability of exposure to WLST-N<72 and propensity-matched exposed to unexposed subjects, treating subjects with WLST-N after 72h as unexposed. We then determined the probability of survival and functionally favorable survival in the unexposed matched cohort. Second, we fit adjusted logistic regression models using data from the unexposed cohort and used these models to predict outcomes in the exposed cohort.

Results: Of 16,875 OHCA subjects, 4,265 (25%) met inclusion criteria. Of these, 1,490 (3%) survived to discharge and 1,101 (26%) had a functionally favorable survival. WLST-N occurred in 1,626 (59% of non-survivors), most commonly on hospital day 1, and 919 (33% of non-survivors) were exposed to WLST-N<72. After matching, there were no differences between the exposed and unexposed groups. In adjusted analyses, exposed subjects had an estimated 25-26% chance of survival and 16% functionally favorable survival had they not received WLST-N<72.

Conclusion: In this large North American cohort, death associated with WLST-N<72 was common. Extrapolating to national epidemiological data, our findings indicate that approximately 4,500 Americans annually who would otherwise survive to discharge instead die because of WLST-N<72, nearly 2,900 (64%) of whom might have had functional recovery. Reducing WLST-N<72 may be an important means to decrease mortality after OHCA and improve public health.