Association Between ICU Admission During Morning Rounds and Mortality

To the Editor:

In a recent issue of CHEST (December 2009), Afessa and colleagues reported that patients admitted to the ICU during morning rounds have higher severity of illness and higher mortality rates. The results of this study are intriguing and may have long-lasting clinical implications. However, we would like to point out certain factors that might have affected the results of the study.1

In assessing independent predictors of hospital mortality, the authors included admission source, Acute Physiology and Chronic Health Evaluation (APACHE) III-predicted mortality, admission time, and intensity of treatment as independent variables in a logistic regression equation. Unless stated otherwise, APACHE III-predicted mortality and intensity of treatment are highly likely to be correlated, and collinearity might be inevitable. Because collinearity introduces imprecise estimates of regression coefficients, increases the standard error of coefficients, and reduces the tests of significance, even slight fluctuations in correlation may lead to large differences in regression coefficients.2 The use of multivariate regression analysis would not adjust for the lack of randomization. A propensity score analysis should have been performed to reduce the bias of comparison between round time and non-round time admissions. In this context, the propensity score, defined as the conditional probability of being admitted during morning rounds given the covariates, can be used to balance the covariates in the two groups and therefore reduce this bias.3 The authors used physician’s round time and non-round time to account for effect on hospital mortality, but did not include factors related to other support staff, which can significantly affect treatment as well as outcomes in ICU patients requiring active treatment.4 Change in nursing shifts as well as patient-to-nurse ratio are important variables to consider in an analysis as they may impact hospital mortality.5

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References

Response
To the Editor:

We thank Drs Desai and El Solh for their letter about our article in CHEST (December 2009) addressing the association between ICU admission during morning round time and mortality. In our study, we created a multiple logistic regression model by entering admission source, Acute Physiology and Chronic Health Evaluation (APACHE) III-predicted mortality rate, and intensity of treatment. Drs Desai and El Solh highlight that such an approach may lead to collinearity; resulting in imprecise estimates of regression coefficients and reduced tests of significance. In addition to several other variables, the APACHE III prognostic model includes the patient’s location before ICU admission as one of the predictor variables.2 The intensity of treatment is also greatly influenced by the severity of illness, measured by the APACHE III prognostic model.3 We share the concern raised by Drs Desai and El Solh. In a previous study, we tried to customize the APACHE III prognostic model to our patient population.4 In...