

Impact of ICU-acquired weakness on post-ICU physical functioning: a follow-up study

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1. Statistical analyses

Propensity score

Because of the sample size, all a priori defined confounders for the multivariate models were summarized into a propensity score. The propensity score was calculated using a logistic regression model with ICU-AW as the dependent variable and the confounders as the independent variables. The resulting predicted value per patient was transformed to the probability scale making the propensity score. The propensity was subsequently added as an independent variable along with ICU-AW in the multivariable analyses.

Multivariable models

Two different multivariable models were used in this study: i.e. a multivariable Cox proportional hazard model to investigate the independent effect of ICU-AW on post-ICU mortality and a multivariable linear regression model to investigate the independent effect of ICU-AW on the physical functioning (PF) domain score.

For the multivariable Cox model, the time to event was first calculated from the day of ICU discharge to day of death up to six months after ICU discharge. Follow-up data for mortality was complete for all patients. Next, the propensity score and ICU-AW were entered in the Cox model to obtain an adjusted hazard ratio. The proportionality of the hazard was verified.

For the multivariable linear regression model, the PF domain score was used as the dependent variable. Although not truly a continuous dependent variable, model assumptions of normality were not violated. ICU-AW and the propensity score were entered as independent variables to the model. The mean predicted effect of

ICU-AW on the PF domain score (the regression coefficient (β) reported with 95% confidence interval) was used for reporting.

2. Regression models

Propensity score

The following regression formula was used to calculate the propensity score

“propensity score = predict(lrm(ICUAW~ age+ gender+ CCI+ max.sofa+ apacheIV+ sep.shock), type=“fitted”)”. The following model was produced:

Variable	Regression coefficient	p-value
intercept	-4.736	<0.01
age	0.034	0.02
gender=female	0.409	0.28
CCI	-0.332	<0.01
max.sofa	0.274	<0.01
apacheIV	-0.004	0.61
sep.shock=yes	0.280	0.50
model likelihood ratio test (X^2)	41.53 (6 df)	<0.01

CCI: Charlson co-morbidity index; SOFA: Sequential Organ Failure Score; apacheIV: Acute Physiology and Chronic Health Evaluation IV score; df: degrees of freedom

Multivariable Cox proportional hazard model

The following regression formula was used to calculate the hazard ratio “*hazard ratio = coxph(surv.obj (observation time) ~ propensity score+ ICUAW)*”. The following model was produced:

Variable	Regression coefficient	p-value
propensity score	-0.212	0.83
ICUAW	1.292	0.01
model likelihood ratio test (X²)	8.62 (2 df)	0.01

ICUAW: Intensive Care Unit – acquired weakness; df: degrees of freedom

Multivariable linear regression model

The following regression formula was used to calculate the hazard ratio “*regression coefficient = lm(SF36 physical functioning domain score ~ propensity score+ ICUAW)*”. The following model was produced:

Variable	Regression coefficient	p-value
propensity score	-6.868	0.61
ICUAW	-16.684	0.02
F-statistic	4.499 (2 df)	0.01

ICUAW: Intensive Care Unit – acquired weakness; df: degrees of freedom