

Development of a Prediction Model for Functional Decline at Hospital Discharge in Older Patients Requiring Mechanical Ventilation in the Emergency Department

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Background and Objectives: Older patients who undergo tracheal intubation in the emergency department (ED) are known to have poor outcomes. This study aimed to develop a prediction model for functional decline at hospital discharge using clinical data obtained at the time of intubation in older patients in the ED. **Methods:** We conducted a retrospective analysis using the JEAN-5 registry. Patients aged ≥ 65 years who were admitted from home and underwent tracheal intubation in the ED between April 2020 and October 2023 were included. Patients with traumatic indications or cardiac arrest were excluded. Predictors available at the time of intubation included age, sex, comorbidities (Charlson Comorbidity Index), and indication for intubation. The primary outcome was functional decline at discharge, defined as a Barthel Index (BI) < 80 . **Results:** Of 379 eligible patients, 143 cases without missing data were included in the analysis. Functional decline (BI < 80) was observed in 39 patients. Among the models tested, logistic regression demonstrated the highest discrimination with an area under the receiver operating characteristic curve (AUC) of 0.61 (95% confidence interval, 0.50–0.71). **Conclusion:** The predictive performance of the models was limited. Future studies should aim to increase the sample size and incorporate additional clinically relevant variables to improve model performance.