

European Respiratory Society Annual Congress 2012

Abstract Number: 5116

Publication Number: P2021

Abstract Group: 2.1. Acute Critical Care

Keyword 1: Critically ill patients **Keyword 2:** Lung injury **Keyword 3:** ALI (Acute Lung Injury)

Title: Influence of the pattern of admission on the outcome of patients admitted to a respiratory intensive care unit: Does the step-down pathway differ from the step-up one?

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Body: The influence of the location prior to the admission in a Respiratory Intensive Care Unit (RICU) on the patients' outcome has never been assessed. We have evaluated the clinical outcomes and prognostic indices, according to their provenience, in 175 consecutive patients admitted over 1-year period in our RICU. 37% of the patients were admitted directly from the Emergency Room (ER), 27% from one of the Intensive Care Units (ICUs) within our hospital, 18% from our Respiratory ward (RW) and 18% transferred from other medical wards (OWs). Patients transferred from our RW had a significantly higher SAPSII score (44 ± 10 vs 34 ± 13 , 33 ± 13 and 41 ± 14 , for ER, ICUs and OWs, respectively), a lower albumin (2.9 ± 0.5 vs 3.2 ± 0.6 and 3.6 ± 0.5 for ICUs and ER, respectively). All the other clinical variables were similar except for CHF that was lower in those patients admitted from the ICUs. Mortality rate was significantly higher in the patients transferred from our RW and OWs (15%, 18%, 38%, 43% for ER, ICUs, OWs and RW, respectively). A Cox multivariate analysis and the mortality risk (Hazard ratio) showed that a high SAPS II score ($p < 0.0114$), low blood albumin levels ($p < 0.0216$), non invasive mechanical ventilation (NIV) ($p < 0.004$) and congestive heart failure ($p < 0.0481$) were significantly associated with the mortality rate. In conclusion, when our RICU acts as "step-down" the mortality rate is lower than when it acts as "step-up", probably because these latter patients are admitted in end-stage conditions. NIV was surprisingly correlated with an high mortality risk, because in a large subset of patients it was used as ceiling treatment.